Baskar, P.
10/020441

FILE 'REGISTRY' ENTERED AT 11:47:31 ON 10 APR 2003
E "GLUTATHIONE-S-TRANSFERASE"/CN 5
L2 17 S "GLUTATHIONE-S-TRANSFERASE"?/CN

- key terms

L14 162 S ELASTASE?/CN

FILE 'HCAPLUS' ENTERED AT 11:52:34 ON 10 APR 2003
L1 6748 SEA FILE=HCAPLUS ABB=ON PLU=ON SCHISTOSOM? OR (SCHISTOSOM? OR S)(W)MANSONI
L2 17 SEA FILE=REGISTRY ABB=ON PLU=ON "GLUTATHIONE-S-TRANSFERASE"?/CN
L14 162 SEA FILE=REGISTRY ABB=ON PLU=ON ELASTASE?/CN
L15 29 SEA FILE=HCAPLUS ABB=ON PLU=ON L1 AND (L14 OR ELASTASE)

L16 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L15 AND (L2 OR FUS##(5A)(PROTEIN OR POLYPROTEIN OR POLYPEPTIDE OR PEPTIDE) OR GLUTATHION? S TRANSFERASE OR JAPONICUM)

L16 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2000:789440 HCAPLUS
DOCUMENT NUMBER: 134:339304
TITLE: Characterization, cloning and immunogenicity of antigens released by transforming cercariae of **Schistosoma mansoni**
AUTHOR(S): Harrop, R.; Jennings, N.; Mountford, A. P.; Coulson, P. S.; Wilson, R. A.
CORPORATE SOURCE: Department of Biology, University of York, York, YO1 5YW, UK
SOURCE: Parasitology (2000), 121(4), 385-394
CODEN: PARAAE; ISSN: 0031-1820
PUBLISHER: Cambridge University Press
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A **schistosome** infection is initiated when the parasite penetrates the skin of a susceptible host. Relatively large quantities of protein are released by transforming cercariae compared to later larval stages. This represents the first parasite material to which the host's immune system is exposed, yet little is known about the proteins which are released during the first few hours post-transformation. The authors have shown that antiserum raised against such mols. was capable of imparting protection against a **schistosome** challenge infection upon passive transfer to naive mice. By screening a cercarial cDNA library with this serum, 38 pos. clones were identified. Sequence anal. showed these to represent 8 different mols. which included **Schistosoma mansoni** 21.7 kDa antigen, calcium-binding-protein and the vaccine candidate **glutathione S-transferase** (Sm28GST). In addn., 5 clones were isolated, 1 of which had significant homol. to many cytochrome c proteins, another with leukocyte **elastase** inhibitors and 3 which represented novel mols. Four clones were expressed in a prokaryotic high-level expression vector, sera produced against each purified recombinant protein and used subsequently to probe Western blots and parasite sections. The leukocyte **elastase** inhibitor homolog and 2 unknowns induced significant proliferation by lymph node cells recovered from mice vaccinated with irradiated cercariae. More strikingly, the 2

novel proteins stimulated very high levels of interferon .gamma. (IFN.gamma.) secretion both by lymph node cells and those recovered by broncho-alveolar lavage from the lungs of vaccinated mice. Such results will be discussed in the context of vaccine development.
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 2000:240788 HCAPLUS
DOCUMENT NUMBER: 132:278172
TITLE: **Schistosoma** recombinant **elastase** fusion protein as a vaccine
INVENTOR(S): Doenhoff, Michael; Sayers, Jon
PATENT ASSIGNEE(S): University of Wales, Bangor, UK
SOURCE: Eur. Pat. Appl., 26 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 992582	A2	20000412	EP 1999-307832	19991005
EP 992582	A3	20030326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 2002182224	A1	20021205	US 2001-20441	20011218

PRIORITY APPLN. INFO.: GB 1998-21821 A 19981007
US 1999-413810 A1 19991007

AB A vaccine for eliciting immunity against **Schistosoma** parasites comprises a recombinant fusion protein of the 27/28-kDa cercarial **elastase** sequence of **S. mansoni** or an active fragment, homolog or variant thereof, and a suitable bacterial, phage or viral protein, together with a pharmaceutically acceptable excipient or carrier. Thus, constructs were generated comprising either exon 2 of **S. mansoni elastase** (encoding amino acid residues 52-157 of the **elastase** protein) or at least the portion encoding residues 136-151, fused to the 28-kDa **glutathione -S-transferase** DNA of S. **japonicum**. The vaccine can be used to combat **S. mansoni**, S. **japonicum**, and/or S. haematobium in mammals, esp. humans.

IT **9004-06-2DP, Elastase**, fusion proteins
50812-37-8DP, Glutathione S-transferase, fusion protein with **elastase** and fragments
RL: BPN (Biosynthetic preparation); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(**Schistosoma** recombinant **elastase** fusion protein as a vaccine)

L16 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1998:804196 HCAPLUS
DOCUMENT NUMBER: 130:49530
TITLE: Bone morphogenetic proteins and their use in

bone growth
INVENTOR(S): Nimni, Marcel E.; Hall, Frederick L.; Wu, Lingtao; Han, Bo; Shors, Edwin C.
PATENT ASSIGNEE(S): USA
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9855137	A1	19981210	WO 1998-US11189	19980602
W: AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ, DE, DE, DK, DK, EE, EE, ES, FI, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 6352972	B1	20020305	US 1997-868452	19970603
AU 9877148	A1	19981221	AU 1998-77148	19980602
EP 1047442	A1	20001102	EP 1998-925128	19980602
R: DE, FR, GB, IT				

PRIORITY APPLN. INFO.:
US 1997-868452 A 19970603
US 1995-470837 A2 19950606
WO 1998-US11189 W 19980602

AB A bone morphogenetic fusion protein and a method of prepn. of the bone morphogenetic fusion protein are described. The bone morphogenetic fusion protein comprises a purifn. tag and a bone morphogenetic active fragment. A method of prepg. bone morphogenetic fusion protein comprises purifying and renaturing bone morphogenetic protein to provide an active bone morphogenetic fusion protein prepn. Methods of use of the bone morphogenetic fusion protein are also provided.

IT **9004-06-2, Elastase**
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); PROC (Process); USES (Uses)
(bone morphogenetic proteins and their use in bone growth)

IT **50812-37-8, Glutathione S-transferase**
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(purifn. tag; bone morphogenetic proteins and their use in bone growth)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1988:508772 HCAPLUS
DOCUMENT NUMBER: 109:108772
TITLE: The immune response to stage-specific

proteolytic enzymes of **Schistosoma mansoni**

AUTHOR(S): Toy, Lisa; Pettit, Matthew; Wang, Yan Fei; Hedstrom, Richard; McKerrow, James H.

CORPORATE SOURCE: Dep. Pathol., Univ. California, San Francisco, CA, 94143, USA

SOURCE: UCLA Symposia on Molecular and Cellular Biology, New Series (1987), 60(Mol. Paradigms Erad. Helminthic Parasites), 85-103
CODEN: USMBD6; ISSN: 0735-9543

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The immune response to 2 stage-specific enzymes of **Schistosoma mansoni** was studied. The cercarial **elastase** is secreted by cercariae during initial invasion of the host. Patients with **schistosomiasis** can be distinguished from controls using this enzyme as antigen in an ELISA. In a single infection there is an immune response to this enzyme detected by ELISA as early as one wk post infection. Reactivity increases to a max. at 9 wk and then diminishes to control levels by 18 wk. In multiply infected animals, the same pattern is seen after each new cercarial exposure. Reactivity appears to be predominantly, if not exclusively, IgM mediated. In contrast, the adult hemoglobinase is produced in quantity only after the gut develops in the **schistosomule**. Immune reactivity is undetectable until .apprx.3-4 wk following infection, when there is a sharp rise in ELISA reactivity due to a predominantly IgG response. In contrast to the response to the cercarial **elastase**, reactivity to the hemoglobinase remains elevated in exptl. animals for several mo following a single infection. There is cross-reactivity to both of these enzymes purified from **S. mansoni** using sera from patients with S. hematobium or S. **japonicum**. The cercarial **elastase** may be a useful marker of cercarial exposure, and the adult hemoglobinase a sensitive marker of ongoing infection and response to therapy.

IT **9004-06-2, Elastase**
RL: BIOL (Biological study)
(of Schistosma mansoni cercariae, antibody response to)

(FILE 'MEDLINE, BIOSIS, EMBASE, WPIDS, CONFSCI, SCISEARCH, JICST-EPLUS, JAPIO' ENTERED AT 11:56:33 ON 10 APR 2003)

L17 11 S L16
L18 5 DUP REM L17 (6 DUPLICATES REMOVED)

L18 ANSWER 1 OF 5 MEDLINE DUPLICATE 1

ACCESSION NUMBER: 2001647790 MEDLINE

DOCUMENT NUMBER: 21553575 PubMed ID: 11696167

TITLE: Infection induces antibodies against the cercarial secretions, but not against the cercarial **elastases** of **Schistosoma mansoni, Schistosoma** haematobium, **Schistosoma japonicum** and Trichobilharzia ocellata.

AUTHOR: Bahgat M; Francklow K; Doenhoff M J; Li Y L; Ramzy R M; Kirsten C; Ruppel A

CORPORATE SOURCE: Department of Tropical Hygiene, University of Heidelberg, Heidelberg, Germany.

SOURCE: PARASITE IMMUNOLOGY, (2001 Oct) 23 (10) 557-65.
Journal code: 7910948. ISSN: 0141-9838.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200112
ENTRY DATE: Entered STN: 20011112
Last Updated on STN: 20020123
Entered Medline: 20011205

AB Cercarial secretions from different species of the parasite **Schistosoma** and from Trichobilharzia ocellata contain a proteolytic activity, cercarial **elastase**, which was demonstrated by a 30 kDa band in gelatin gels. Sera of patients infected with **Schistosoma mansoni**, **Schistosoma** haematobium or **Schistosoma japonicum** contain immunoglobulin G which react in ELISA with cercarial secretions from all **schistosomes** and cross-react among the different parasite species. In Western blots, however, infection sera from patients, as well as heavily infected mice or rabbits, did not react with a 30-kDa protein. Moreover, when sections from infected snails (Biomphalaria, Bulinus and Lymnaea) were analysed by immunofluorescence using the same infection sera, only the tegument of the developing cercariae was recognized, but not the acetabular glands. In contrast, when antisera against purified cercarial **elastase** from either **S. mansoni** or S. haematobium were tested with sections of infected Biomphalaria or Bulinus, fluorescence was strong in the preacetabular glands of the cercariae of either species, but undetectable with the tegument. Cross-reactivity of both antisera extended to T. ocellata-infected Lymnaea, but not to S. **japonicum**-infected Oncomelania. In conclusion, although immunization with purified cercarial **elastase** results in antibody production, the enzyme does not induce an apparent antibody response following natural infection.

L18 ANSWER 2 OF 5 WPIDS (C) 2003 THOMSON DERWENT

ACCESSION NUMBER: 2000-259136 [23] WPIDS
DOC. NO. CPI: C2000-079422
TITLE: New vaccine for treatment of **Schistosoma** infections contains a recombinant fusion **protein** comprising cercarial **elastase** sequence **fused** to bacterial, phage or viral **protein.**
DERWENT CLASS: B04 D16
INVENTOR(S): DOENHOFF, M; SAYERS, J
PATENT ASSIGNEE(S): (UYWA-N) UNIV WALES BANGOR; (UYWA-N) UNIV WALES
COUNTRY COUNT: 26
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
EP 992582	A2	20000412	(200023)*	EN	26
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI					
US 2002182224	A1	20021205	(200301)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 992582	A2	EP 1999-307832	19991005
US 2002182224	A1 Cont of	US 1999-413810	19991007
		US 2001-20441	20011218

PRIORITY APPLN. INFO: GB 1998-21821 19981007
AN 2000-259136 [23] WPIDS
AB EP 992582 A UPAB: 20000516
NOVELTY - A vaccine (I), comprising a recombinant fusion protein (II) capable of eliciting immunity against **Schistosoma** parasites, is new and comprises the 27 or 28 kDa cercarial **elastase** sequence of **S. mansoni** or an active fragment, homolog or variant, fused to a bacterial, phage or viral protein.

ACTIVITY - **Schistosomicide.**

MECHANISM OF ACTION - Vaccine.

USE - (I) is used to elicit immunity against **Schistosoma mansoni** and/or S. haematobium in humans (claimed).

ADVANTAGE - Prior art methods for treatment of **schistosomiasis** including treating water to kill intermediate hosts, or treatment of the patient with drugs, are impractical. (I) containing the fusion protein has been found to induce a significantly increased antibody response against **schistosoma** infections, compared to the use of **S. mansoni** cercial **elastase** in its native form.
Dwg.0/8

L18 ANSWER 3 OF 5 MEDLINE DUPLICATE 2
ACCESSION NUMBER: 2000513949 MEDLINE
DOCUMENT NUMBER: 20523053 PubMed ID: 11072901
TITLE: Characterization, cloning and immunogenicity of antigens released by transforming cercariae of **Schistosoma mansoni.**
AUTHOR: Harrop R; Jennings N; Mountford A P; Coulson P S; Wilson R A
CORPORATE SOURCE: Department of Biology, University of York.. r.harrop@oxfordbiomedica.co.uk
SOURCE: PARASITOLOGY, (2000 Oct) 121 (Pt 4) 385-94. Journal code: 0401121. ISSN: 0031-1820.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AF030972
ENTRY MONTH: 200101
ENTRY DATE: Entered STN: 20010322
Last Updated on STN: 20010322
Entered Medline: 20010111

AB A **schistosome** infection is initiated when the parasite penetrates the skin of a susceptible host. Relatively large quantities of protein are released by transforming cercariae compared to later larval stages. This represents the first parasite material to which the host's immune system is exposed, yet little is known about the proteins which are released during the first few

hours post-transformation. We have shown that antiserum raised against such molecules was capable of imparting protection against a **schistosome** challenge infection upon passive transfer to naive mice. By screening a cercarial cDNA library with this serum, 38 positive clones were identified. Sequence analysis showed these to represent 8 different molecules which included **Schistosoma mansoni** 21-7 kDa antigen, calcium-binding-protein and the vaccine candidate **glutathione S-transferase** (Sm28GST). In addition, 5 clones were isolated, 1 of which had significant homology to many cytochrome C proteins, another with leukocyte **elastase** inhibitors and 3 which represented novel molecules. Four clones were expressed in a prokaryotic high-level expression vector, sera produced against each purified recombinant protein and used subsequently to probe Western blots and parasite sections. The leukocyte **elastase** inhibitor homologue and 2 unknowns induced significant proliferation by lymph node cells recovered from mice vaccinated with irradiated cercariae. More strikingly, the 2 novel proteins stimulated very high levels of interferon gamma (IFNgamma) secretion both by lymph node cells and those recovered by broncho-alveolar lavage from the lungs of vaccinated mice. Such results will be discussed in the context of vaccine development.

L18 ANSWER 4 OF 5 SCISEARCH COPYRIGHT 2003 ISI (R)
ACCESSION NUMBER: 97:383640 SCISEARCH
THE GENUINE ARTICLE: WY488
TITLE: Cloning, heterologous expression and antigenicity of a **schistosome** cercarial protease
AUTHOR: Price H P; Doenhoff M J; Sayers J R (Reprint)
CORPORATE SOURCE: UNIV SHEFFIELD, ROYAL HALLAMSHIRE HOSP, SECT MOL MED, DEPT MED & PHARMACOL, SHEFFIELD S10 2JF, S YORKSHIRE, ENGLAND (Reprint); UNIV SHEFFIELD, SECT MOL MED, SHEFFIELD S10 2JF, S YORKSHIRE, ENGLAND; UNIV COLL N WALES, SCH BIOL SCI, BANGOR LL57 2UW, GWYNEDD, WALES
COUNTRY OF AUTHOR: ENGLAND; WALES
SOURCE: PARASITOLOGY, (MAY 1997) Vol. 114, Part 5, pp. 447-453.
Publisher: CAMBRIDGE UNIV PRESS, 40 WEST 20TH STREET, NEW YORK, NY 10011-4211.
ISSN: 0031-1820.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 33
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB A gene coding for the 30 kDa **Schistosoma mansoni** cercarial protease was amplified using the polymerase chain reaction (PCR) from genomic DNA templates. Cloning and sequencing of several independent PCR clones revealed the presence of an intron additional to the one described in the original cloning of the gene. The 3 exons were cloned into expression vectors so that they could be expressed as separate **glutathione-S-transferase** (GST) translational fusions. Recombinant bacteria carrying these expression plasmids expressed the fusion proteins at high levels. Western blotting of bacterial lysates with sera raised against the native **S. mansoni** cercarial protease showed that

all 3 exons were recognized. Thus we have produced recombinant bacteria capable of providing large amounts of an **S. mansoni** antigen for immunological studies and evaluation as a candidate vaccine.

L18 ANSWER 5 OF 5 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1988:232966 BIOSIS
DOCUMENT NUMBER: BR34:115486
TITLE: THE IMMUNE RESPONSE TO STAGE-SPECIFIC PROTEOLYTIC ENZYMES OF **SCHISTOSOMA-MANSONI.**
AUTHOR(S): TOY L; PETTIT M; WANG Y F; HEDSTROM R; MCKERROW J H
CORPORATE SOURCE: DEP. PATHOLOGY, UNIV. CALIFORNIA, SAN FRANCISCO, CALIF. 94143.
SOURCE: MACINNIS, A. J. (ED.). UCLA (UNIVERSITY OF CALIFORNIA-LOS ANGELES) SYMPOSIA ON MOLECULAR AND CELLULAR BIOLOGY NEW SERIES, VOL. 60. MOLECULAR PARADIGMS FOR ERADICATING HELMINTHIC PARASITES; UPJOHN-UCLA SYMPOSIUM, STEAMBOAT SPRINGS, COLORADO, USA, JANUARY 24-31, 1987. XXIII+576P. ALAN R. LISS, INC.: NEW YORK, NEW YORK, USA. ILLUS, (1987) 0 (0), 85-104.
CODEN: USMBD6. ISSN: 0735-9543. ISBN: 0-8451-2659-8.
FILE SEGMENT: BR; OLD
LANGUAGE: English

FILE 'HCAPLUS' ENTERED AT 11:58:30 ON 10 APR 2003
L19 0 S L15 AND GST

FILE 'MEDLINE, BIOSIS, EMBASE, WPIDS, CONFSCI, SCISEARCH, JICST-EPLUS, JAPIO' ENTERED AT 11:58:35 ON 10 APR 2003
L20 1 S L19
L21 0 S L20 NOT L17

(FILE 'HCAPLUS' ENTERED AT 11:59:25 ON 10 APR 2003)
L1 6748 SEA FILE=HCAPLUS ABB=ON PLU=ON SCHISTOSOM? OR (SCHISTOSOM? OR S)(W)MANSONI
L2 17 SEA FILE=REGISTRY ABB=ON PLU=ON "GLUTATHIONE-S-TRANSFERASE"?/CN
L22 336 SEA FILE=HCAPLUS ABB=ON PLU=ON L1 AND (L2 OR FUS##(5A)(PROTEIN OR POLYPROTEIN OR POLYPEPTIDE OR PEPTIDE) OR GLUTATHION? S TRANSFERASE OR GST)
L23 145 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND RECOMBINAN?
L24 87 SEA FILE=HCAPLUS ABB=ON PLU=ON L23 AND JAPONICUM
L25 57 SEA FILE=HCAPLUS ABB=ON PLU=ON L24 AND (VACCIN? OR IMMUN?)
L26 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L25 AND ADMIN?

L27 2 L26 NOT L16

L27 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1998:495268 HCAPLUS
DOCUMENT NUMBER: 129:243807
TITLE: Production and testing of **Schistosoma japonicum** candidate **vaccine** antigens in the natural ovine host
AUTHOR(S): Taylor, Martin G.; Huggins, Maureen C.; Fuhui, Shi; Lin, Jiaojiao; Tian, E.; Ping, Ye; Wei,

Shen; Gui, Qian Chen; Fa, Lin Bang; Bickle, Quentin D.
CORPORATE SOURCE: Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, WC1E 7HT, UK
SOURCE: Vaccine (1998), 16(13), 1290-1298
CODEN: VACCDE; ISSN: 0264-410X
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The objectives of this work were to clone and express Chinese strain **Schistosoma japonicum** antigens and evaluate their **immunogenicity** and protective efficacy in the natural ovine host in China. **Recombinant** antigens selected for testing were: isoforms of **glutathione S-transferase** Sj28GST and Sj26GST; the large hydrophilic domain of Sj23, the homolog of the protective **S. mansoni** membrane antigen Sm23; and a 3' fragment of S. **japonicum** paramyosin. In addn., Chinese strain S. **japonicum** native paramyosin and **GST** were purified and used for **vaccination**. Antigens were co-**administered** with Freund's adjuvants or BCG. We also examd. the effects of co-**administration** of native unfractionated **GSTs** with keyhole limpet hemocyanin (KLH), which shares a cross-reactive protective epitope with **schistosomes**. These are the first side-by-side comparisons of candidate defined-antigen **schistosomiasis vaccines** in a natural host. Significant partial protection was obtained with each of the antigens tested. Less protection was obtained with a **recombinant** fragment of S. **japonicum** paramyosin compared with native paramyosin. Co-**administration** of native **GST** and KLH was no more effective than **vaccination** with either antigen alone. Although encouraging levels of protection against S. **japonicum** were demonstrated using each of these antigens, further work is needed to optimize **vaccine** delivery and **vaccination** schedules.
IT **50812-37-8, Glutathione S-transferase**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(prodn. and testing of **Schistosoma japonicum** candidate **vaccine** antigens in natural ovine host)

L27 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1994:678424 HCAPLUS
DOCUMENT NUMBER: 121:278424
TITLE: **Immunogenicity** of Nef protein of SIV SMM-PBj14 expressed in a live **vaccine** strain of Salmonella species
AUTHOR(S): Cattozzo, Elisa Margherita; Stocker, Bruce A. D.
CORPORATE SOURCE: School Medicine, Stanford University, Stanford, CA, 94305, USA
SOURCE: AIDS Research and Human Retroviruses (1994), 10(8), 1011-19
CODEN: ARHRE7; ISSN: 0889-2229
DOCUMENT TYPE: Journal

LANGUAGE: English

AB The nef gene of an infectious mol. clone of SIVSMM isolate PBj14 was fused to the **glutathione S-transferase** gene of **Schistosoma japonicum** to generate plasmid pEMC100. The **recombinant** plasmid was placed in an aroA live **vaccine** Salmonella dublin strain, and the prodn. of **GST**-Nef protein was induced by exposure to IPTG. The fusion protein was purified and **administered** as **vaccine** to BALB/c mice by i.p. injection. Several doses of the purified fusion protein produced an earlier anti-**GST** -Nef response, without an anti-**GST** response, than did IPTG-induced Salmonella live **vaccine** contg. an equal amt. (0.1 .mu.g) of fusion protein, apparently because of the transient **immunosuppressive** effect of live **vaccine** given by injection. The highest anti-**GST**-Nef titers were obtained by a third **immunization** schedule in which mice were treated with a priming inoculum of induced live **vaccine** followed, after the predicted **immunosuppressed** interval, by two i.p. doses of 1 .mu.g of purified **GST**-Nef protein with Ribi adjuvant. The data demonstrate that SL5928 aroA, an attenuated S. dublin strain, can be used as a live **vaccine** carrier to express Nef protein of SIVSMM-PBj14, one of the most acutely pathogenic primate lentiviruses so far described.

(FILE 'MEDLINE, BIOSIS, EMBASE, WPIDS, CONFSCI, SCISEARCH, JICST-EPLUS, JAPIO' ENTERED AT 12:07:11 ON 10 APR 2003)

L28 21 S L26
L29 21 S L28 NOT L17
L30 13 DUP REM L29 (8 DUPLICATES REMOVED)

L30 ANSWER 1 OF 13 SCISEARCH COPYRIGHT 2003 ISI (R)
ACCESSION NUMBER: 2000:926889 SCISEARCH
THE GENUINE ARTICLE: 379CJ
TITLE: Effect of combined praziquantel and **recombinant glutathione S -transferase** on resistance to reinfection in murine **Schistosomiasis mansoni**
AUTHOR: Botros S S (Reprint); Makary E A; Ahmed K M; Ibrahim A M; Nashed N N; ElNahal H M S; Doughty B L; Hassanein H I
CORPORATE SOURCE: THEODOR BILHARZ RES INST, DEPT PHARMACOL, POB 30, IMBABA, CAIRO 12411, EGYPT (Reprint); THEODOR BILHARZ RES INST, DEPT PARASITOL, CAIRO 12411, EGYPT; THEODOR BILHARZ RES INST, DEPT IMMUNOL, CAIRO 12411, EGYPT; AIN SHAMS UNIV, FAC SCI, CAIRO, EGYPT; UNIV TEXAS, GALVESTON, TX 77555
COUNTRY OF AUTHOR: EGYPT; USA
SOURCE: INTERNATIONAL JOURNAL OF IMMUNOPHARMACOLOGY, (NOV 2000) Vol. 22, No. 11, pp. 979-988.
Publisher: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND.
ISSN: 0192-0561.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 33
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB This study was undertaken to evaluate the effect of **recombinant Schistosoma mansoni**-26 **Glutathione S-transferase** (rSm 26 **GST**) or soluble egg antigen (SEA) alone and in addition to praziquantel (PZQ) on the state of resistance to **S. mansoni** reinfection. The associated changes in the **immune** responses were evaluated. The experimental group of mice were injected intravenously before **S. mansoni** infection (80 cercariae/mouse) either with rSm26 **GST** (1 mug x 4) or SEA (10 mug x 4) in addition to PZQ (2 x 500 mg/kg) **administered** 6 weeks post-infection. Seven control groups were used, three of them were the infected (80 cercariae/mouse), the challenged (240 cercariae/mouse) and the infected challenged controls (80+240 cercariae/mouse). The rest of the four groups were the treated controls receiving: the **GST**-Lyzate, rSmGST, SEA and PZQ in the same doses and at the same timings. Challenge infection was conducted for all the groups 8 weeks post-infection. Animals were sacrificed 3 weeks post-challenge. After sacrifice animals were perfused and percentage resistance to reinfection was calculated. **Immune** responses were assessed by the measurement of hepatic granuloma diameter, intralesional T-cell phenotypes and serum **immunoglobulin** isotypes. The highest percentage of resistance to reinfection was observed in rGST-treated group while the lowest percentage of resistance was detected in PZQ-treated group. Whereas in mice receiving combined rGST or SEA and PZQ, percentage resistance to reinfection was significantly higher than that in PZQ treated mice. The remarkable reduction in granuloma diameter in rGST-treated group with or without PZQ was associated with decrease in the intralesional L3T4+ and increase in Lyt(2)(+) T-cell phenotypes. However, no special relationship was observed between the percentage of resistance and the changes in granuloma diameter or intralesional T-cell phenotypes. The increase in percentage resistance to reinfection was found accompanied by increased anti SWAP IgE. Combined rGST and PZQ provided the complementary goals of improved state of resistance to reinfection 'which was compromized after cure with PZQ' and the maximal reduction in granuloma diameter. (C) 2000 Published by Elsevier Science Ltd on behalf of International Society for **Immunopharmacology**. All rights reserved.

L30 ANSWER 2 OF 13 MEDLINE DUPLICATE 1
ACCESSION NUMBER: 2001504303 MEDLINE
DOCUMENT NUMBER: 21062731 PubMed ID: 11077263
TITLE: Molecular cloning and enzymatic expression of the 28-kDa **glutathione S-transferase** of **Schistosoma japonicum**: evidence for sequence variation but lack of consistent **vaccine** efficacy in the murine host.
AUTHOR: Scott J C; McManus D P
CORPORATE SOURCE: Molecular Parasitology Unit, Australian Centre for International and Tropical Health and Nutrition, The University of Queensland, Post Office Royal Brisbane Hospital, Herston, Queensland 4029, Brisbane, Australia.
SOURCE: PARASITOLOGY INTERNATIONAL, (2000 Dec) 49 (4) 289-300.
Journal code: 9708549. ISSN: 1383-5769.

PUB. COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AF044411
ENTRY MONTH: 200109
ENTRY DATE: Entered STN: 20010917
Last Updated on STN: 20010917
Entered Medline: 20010913

AB **Glutathione S-transferases** (**GSTs**) have long been regarded as attractive **vaccine** (and drug) targets in **schistosomes** due to their suspected role in detoxification processes. Indeed, the 28-kDa **GST** of **Schistosoma mansoni** (SmGST28) has proven efficacy as an antigen for protective **immunity** reducing worm burden, female fecundity and egg viability. In contrast, the **vaccinating** effects of the bacterial expressed homologue of Philippine S. **japonicum** (SjpGST26) have proved disappointing, possibly because this **recombinant** form was an incomplete sequence, lacking five N-terminal amino acids which may have affected its **vaccination** efficacy. Here we describe the cloning and functional enzymatic expression of a complete cDNA encoding SjpGST28. We report also on the **immunogenicity** and **vaccine** efficacy of this molecule as a purified **recombinant** protein and as a DNA plasmid **vaccine** in the murine model. We further describe the cloning of several complete cDNAs encoding the Chinese homologue of SjpGST28 and the identification of 3 SjcGST28 sequence variants which are probably encoded by distinct alleles.

L30 ANSWER 3 OF 13 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 2000090462 EMBASE
TITLE: A **vaccine** against Asian **schistosomiasis**: The story unfolds.
AUTHOR: McManus D.P.
CORPORATE SOURCE: D.P. McManus, Molecular Parasitology Unit, Bancroft Centre, Queensland Institute Medical Res., 300 Herston Road, Brisbane, QLD 4029, Australia. donM@qimr.edu.au
SOURCE: International Journal for Parasitology, (1 Mar 2000) 30/3 (265-271).
Refs: 31
ISSN: 0020-7519 CODEN: IJPYBT
PUBLISHER IDENT.: S 0020-7519(99)00200-3
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Conference Article
FILE SEGMENT: 017 Public Health, Social Medicine and Epidemiology
026 Immunology, Serology and Transplantation
029 Clinical Biochemistry
030 Pharmacology
037 Drug Literature Index
004 Microbiology
LANGUAGE: English
SUMMARY LANGUAGE: English

AB The development of an effective **vaccine** against the Asian **schistosome** is at a critical stage. Despite the fact that progress has been relatively slow, the successful use in animals of

attenuated **vaccines** combined with recent encouraging results using defined native and **recombinantly** derived **Schistosoma japonicum** antigens, suggests that development of a safe and effective **vaccine** is feasible. This review examines current progress aimed at achieving this objective, and a summary is provided of recent results obtained with the most encouraging **vaccine** antigens. When available for wide-scale use, it is envisaged that the **vaccine** would be applied in the first instance, at least in China, in the veterinary context (to impact on human transmission) and then, perhaps, if required, clinically (to prevent or reduce disease). The search for the final product is likely to be demanding, and funding issues pertaining to Good Manufacturing Practice-scale-up of the **vaccine** for the required extensive veterinary coverage, and to support any future human trials, will need to be resolved. As such, we may still have to wait some time before the ultimate **vaccine**, possibly comprising a cocktail of several molecules, is available. Even then, the **vaccine** would probably be used optimally as one component of an integrated programme of **schistosomiasis** control that would include effective and well-tested approaches, such as health education and targeted chemotherapy. Copyright (C) 2000 Australian Society for Parasitology Inc.

L30 ANSWER 4 OF 13 MEDLINE DUPLICATE 2
ACCESSION NUMBER: 1998347315 MEDLINE
DOCUMENT NUMBER: 98347315 PubMed ID: 9682393
TITLE: Production and testing of **Schistosoma japonicum** candidate **vaccine** antigens in the natural ovine host.
AUTHOR: Taylor M G; Huggins M C; Shi F; Lin J; Tian E; Ye P; Shen W; Qian C G; Lin B F; Bickle Q D
CORPORATE SOURCE: Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, UK.
SOURCE: VACCINE, (1998 Aug) 16 (13) 1290-8. Journal code: 8406899. ISSN: 0264-410X.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199810
ENTRY DATE: Entered STN: 19981021
Last Updated on STN: 20000303
Entered Medline: 19981015

AB The objectives of this work were to clone and express Chinese strain **Schistosoma japonicum** antigens and evaluate their **immunogenicity** and protective efficacy in the natural ovine host in China. **Recombinant** antigens selected for testing were: isoforms of **glutathione S-transferase** Sj28GST and Sj26GST; the large hydrophilic domain of Sj23, the homologue of the protective **S. mansoni** membrane antigen Sm23; and a 3' fragment of S. **japonicum** paramyosin. In addition, Chinese strain S. **japonicum** native paramyosin and **GST** were purified and used for **vaccination**. Antigens were co-**administered** with Freund's adjuvants or BCG. We also examined the effects of co-**administration** of native unfractionated **GSTs** with keyhole limpet haemocyanin (KLH),

which shares a cross-reactive protective epitope with **schistosomes**. These are the first side-by-side comparisons of candidate defined-antigen **schistosomiasis vaccines** in a natural host. Significant partial protection was obtained with each of the antigens tested. Less protection was obtained with a **recombinant** fragment of S. **japonicum** paramyosin compared with native paramyosin. Co-**administration** of native **GST** and KLH was no more effective than **vaccination** with either antigen alone. Although encouraging levels of protection against S. **japonicum** were demonstrated using each of these antigens, further work is needed to optimise **vaccine** delivery and **vaccination** schedules.

L30 ANSWER 5 OF 13 SCISEARCH COPYRIGHT 2003 ISI (R)
ACCESSION NUMBER: 97:601995 SCISEARCH
THE GENUINE ARTICLE: XP721
TITLE: Oral **vaccination** of mice with **recombinant Schistosoma japonicum** proteins induces specific antiparasite antibodies and damage to adult worms after a challenge infection
AUTHOR: Yang W; Gobert G N; McManus D P (Reprint)
CORPORATE SOURCE: QUEENSLAND INST MED RES, AUSTRALIAN CTR INT & TROP HLTH & NUTR, TROP HLTH PROGRAM, BRISBANE, QLD 4029, AUSTRALIA (Reprint); QUEENSLAND INST MED RES, AUSTRALIAN CTR INT & TROP HLTH & NUTR, TROP HLTH PROGRAM, BRISBANE, QLD 4029, AUSTRALIA; QUEENSLAND UNIV TECHNOL, ANALYT ELECTRON MICROSCOPY FACIL, BRISBANE, QLD 4001, AUSTRALIA
COUNTRY OF AUTHOR: AUSTRALIA
SOURCE: INTERNATIONAL JOURNAL FOR PARASITOLOGY, (JUL 1997) Vol. 27, No. 7, pp. 843-853.
Publisher: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD, ENGLAND OX5 1GB.
ISSN: 0020-7519.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 45
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Mucosal **immunisation** by the oral route represents a cheap and simple method for delivering protective antigens to a host against gastrointestinal and respiratory pathogens. In the case of **schistosome** (bloodfluke) worms, 2 life-cycle stages may be exposed to the host's mucosa; the larval **schistosomulum** is exposed to the respiratory mucosa and, depending on the species, the egg may come into contact with the intestinal or urinogenital mucosa. Both IgA and some isotypes of Ige hare been implicated in protective **immunity** against **schistosomiasis** in humans and in experimental animal models. We have used a novel approach to determine whether **schistosome**-specific antibodies and protective **immunity** could he generated in mice by oral **administration** of bacterial lysates containing **recombinant Schistosoma japonicum** proteins. The mice produced specific antibodies to paramyosin and GST26, 2 important **vaccine** candidates for

schistosomiasis, but there was no significant reduction in worm burdens in groups of mice **immunised** with either protein, Significantly, however, transmission electron microscopy revealed damage to the teguments of adult female and male S. **japonicum** worms obtained from mice **vaccinated** with **recombinant** paramyosin; there was also extensive damage to the tegument of male worms recovered from mice **vaccinated** with **recombinant** GST26. Our observations that oral **vaccination** with bacterial lysates containing **recombinant** proteins induced particular classes and subclasses of circulating antibodies with resultant damage to the surface of adult worms may have important implications far the future development of oral **vaccines** against a systemic infection such as **schistosomiasis**. (C) 1997 Australian Society for Parasitology. Published by Elsevier Science Ltd.

L30 ANSWER 6 OF 13 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 97138029 EMBASE
DOCUMENT NUMBER: 1997138029
TITLE: Anti-sj26 **GST**, anti-**glutathione S-transferase**.
AUTHOR: Syu W.-J.
CORPORATE SOURCE: W.-J. Syu, Institute of Microbiology/Immunology, National Yang-Ming University, Shih-Pai, 112 Taipei, Taiwan,Province of China
SOURCE: Hybridoma, (1997) 16/2 (202).
Refs: 1
ISSN: 0272-457X CODEN: HYBRDY
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
026 Immunology, Serology and Transplantation
037 Drug Literature Index
LANGUAGE: English

L30 ANSWER 7 OF 13 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 97158909 EMBASE
DOCUMENT NUMBER: 1997158909
TITLE: Anti-fecundity **immunity** to **Schistosoma japonicum** induced in Chinese water buffaloes (Bos buffelus) after **vaccination** with **recombinant** 26 kDa **glutathione-S-transferase** (reSjc26GST).
AUTHOR: Shuxian L.; Yongkang H.; Guangchen S.; Xing-Song L.; Yuxin X.; McManus D.P.
CORPORATE SOURCE: D.P. McManus, Molecular Parasitology Unit, ACITHN, Queensland Inst. of Medical Research, 300 Herston Road, Brisbane, Qld. 4006, Australia. donM@qimr.edu.au
SOURCE: Veterinary Parasitology, (1997) 69/1-2 (39-47).
Refs: 29
ISSN: 0304-4017 CODEN: VPARDI
PUBLISHER IDENT.: S 0304-4017(96)01092-8
COUNTRY: Netherlands
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
026 Immunology, Serology and Transplantation

037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
AB We have shown previously that **immunisation** of mice and pigs with **recombinant** 26 kDa **GST** (reSjc26GST) induces a pronounced anti-fecundity effect after experimental infection with Chinese **Schistosoma japonicum**. We report here that anti-fecundity **immunity** can also be induced against reSjc26GST in Chinese water buffaloes (Bos buffelus), important reservoir hosts for S. **japonicum** in China. Anti-Sjc26GST antibodies were produced in **immunised** buffaloes and, following challenge with S. **japonicum** cercariae, a 22.3% reduction in worm numbers was evident in **vaccinated** when compared with control animals. The anti-fecundity effect was characterised by a significant decrease in faecal egg output and eggs deposited in host tissues with those in the liver and intestine being reduced by about 50%. In addition to the anti-fecundity effect, reSjc26GST reduced by nearly 40% the egg-hatching capacity of S. **japonicum** eggs into viable miracidia. In terms of **vaccination** strategy, these effects would combine to diminish pathology in animals **immunised** with reSjc26GST and reduce transmission of **schistosomiasis** japonica.

L30 ANSWER 8 OF 13 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 95169990 EMBASE
DOCUMENT NUMBER: 1995169990
TITLE: **Immunization** of mice with **recombinant** Sjc26GST induces a pronounced antifecundity effect after experimental infection with Chinese **Schistosoma japonicum**
.
AUTHOR: Shuxian L.; Guangchen S.; Yuxian X.; Yang W.; McManus D.P.
CORPORATE SOURCE: Department Immunology, Institute Parasitic Diseases, Chinese Academy Preventive Medicine,Shanghai 200025, China
SOURCE: Vaccine, (1995) 13/6 (603-607).
ISSN: 0264-410X CODEN: VACCDE
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
026 Immunology, Serology and Transplantation
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
AB We report the cloning, by polymerase chain reaction (PCR), of a cDNA encoding a **Schistosoma japonicum** (Chinese) 26 kDa glutathione-S-tranferase (**GST**) (Sjc26GST), expression of the cDNA, affinity purification of the **recombinant** **GST** and its **vaccine** efficacy in outbred NIH mice using Freund's as adjuvant. The most striking feature of the **vaccination** experiments was the pronounced reduction in the number of eggs in the livers and spleens of **immunized** mice. A relatively low but significant level of protection in terms of reduced worm viability against challenge infection was also observed. Further, the level of anti-Sjc26GST antibody in **immunized** mice was significantly higher than in control mice

at week 6 post-challenge infection. These results closely mirror the protection conferred by **immunization** of animals with the 28 kDa **GST** of **S. mansoni** (Sm28) where a reduction in worm viability, worm fecundity and egg-hatching ability have been reported following challenge with **S. mansoni**. In terms of developing a **vaccine** against **schistosomiasis** japonica, **immunization** with Sjc26GST can provide two complementary goals in human or animal populations - some reduction in worm burden following exposure to infection or reinfection, and an anti-disease effect through reduction of pathology by a decrease in worm fecundity, with this direct effect also affecting the transmission of S. **japonicum**.

L30 ANSWER 9 OF 13 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 95245977 EMBASE
DOCUMENT NUMBER: 1995245977
TITLE: Anti-fecundity **immunity** induced in pigs **vaccinated** with **recombinant** **Schistosoma japonicum** 26 kDa **glutathione-S-transferase**
.
AUTHOR: Liu S.X.; Song G.C.; Xu Y.X.; Yang W.; McManus D.P.
CORPORATE SOURCE: Molecular Parasitology Unit, Queesland Inst. Medical Research,Brisbane, QLD 4029, Australia
SOURCE: Parasite Immunology, (1995) 17/7 (335-340).
ISSN: 0141-9838 CODEN: PAIMD8
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 004 Microbiology
026 Immunology, Serology and Transplantation
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
AB We have recently reported (Liu et al. 1995) that **immunization** of mice with **recombinant** 26kDa **GST** (reSjc26GST) induces a pronounced anti-fecundity effect after experimental infection with Chinese **Schistosoma japonicum**. A similar **vaccination** trial was thus carried out on pigs, important reservoirs for **schistosomiasis** japonica, using purified, reSjc2dGST and reSjp26GST from **Schistosoma japonicum** with alum as adjuvant; in general, similar results were obtained with the two sources of **recombinant** 26kDa **GST**. Some protection in terms of worm reduction, significant with males, against challenge infection was observed in **vaccinated** pigs. Moreover, prior to challenge, levels of specific anti-re26GST antibodies in the **vaccinated** pigs were significantly higher than in non-**vaccinated** pigs as determined by **GST**-ELISA. The most striking feature of the **vaccine** trial was the significant reduction in the number of eggs, especially mature eggs, in the livers of **vaccinated** animals. The results indicate that **immunization** with **recombinant** Sj26GST can provide some reduction in worm burden following exposure of pigs to reinfection with S. **japonicum**. In addition, reSj26GST cart induce an anti-fecundity effect, thereby reducing pathology, coupled with a delay or interruption of the development of immature to mature eggs

in the liver. As a consequence, **vaccination** with Sj26GST would also prove useful in affecting the transmission of **schistosomiasis** japonica.

L30 ANSWER 10 OF 13 MEDLINE DUPLICATE 3
ACCESSION NUMBER: 95110625 MEDLINE
DOCUMENT NUMBER: 95110625 PubMed ID: 7811532
TITLE: **Immunogenicity** of Nef protein of SIVSMM-PBj14 expressed in a live **vaccine** strain of Salmonella species.
AUTHOR: Cattozzo E M; Stocker B A
CORPORATE SOURCE: Department of Microbiology and Immunology, Stanford University School of Medicine, California 94305.
CONTRACT NUMBER: AI27722 (NIAID)
SOURCE: AIDS RESEARCH AND HUMAN RETROVIRUSES, (1994 Aug) 10 (8) 1011-9.
Journal code: 8709376. ISSN: 0889-2229.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals; AIDS
ENTRY MONTH: 199502
ENTRY DATE: Entered STN: 19950217
Last Updated on STN: 19980206
Entered Medline: 19950209

AB The nef gene of an infectious molecular clone of SIVSMM isolate PBj14 was fused to the **glutathione S-transferase** gene of **Schistosoma japonicum** to generate plasmid pEMC100. The **recombinant** plasmid was placed in an aroA live **vaccine** Salmonella dublin strain, and the production of **GST**-Nef protein was induced by exposure to IPTG. The fusion protein was purified and **administered** as **vaccine** to BALB/c mice by i.p. injection. Several doses of the purified fusion protein produced an earlier anti-**GST**-Nef response, without an anti-**GST** response, than did IPTG-induced Salmonella live **vaccine** containing an equal amount (0.1 microgram) of fusion protein, apparently because of the transient **immunosuppressive** effect of live **vaccine** given by injection. The highest anti-**GST**-Nef titers were obtained by a third **immunization** schedule in which mice were treated with a priming inoculum of induced live **vaccine** followed, after the predicted **immunosuppressed** interval, by two i.p. doses of 1 microgram of purified **GST**-Nef protein with Ribi adjuvant. The data presented here demonstrate that SL5928 aroA, an attenuated S. dublin strain, can be used as a live **vaccine** carrier to express Nef protein of SIVSMM-PBj14, one of the most acutely pathogenic primate lentiviruses so far described.

L30 ANSWER 11 OF 13 MEDLINE DUPLICATE 4
ACCESSION NUMBER: 95107651 MEDLINE
DOCUMENT NUMBER: 95107651 PubMed ID: 7808760
TITLE: **Vaccination** of goats against the trematode **Schistosoma** bovis with a **recombinant** homologous **schistosome**-derived **glutathione S-transferase**
.
AUTHOR: Boulanger D; Trottein F; Mauny F; Bremond P; Couret

D; Pierce R J; Kadri S; Godin C; Sellin E; Lecocq J P; +
CORPORATE SOURCE: Centre de Recherche sur les Meningites et les Schistosomiases (CERMES/OCCGE/ORSTOM), Niamey, Niger.
SOURCE: PARASITE IMMUNOLOGY, (1994 Aug) 16 (8) 399-406. Journal code: 7910948. ISSN: 0141-9838.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199501
ENTRY DATE: Entered STN: 19950215
Last Updated on STN: 19980206
Entered Medline: 19950130

AB We assayed the **vaccine** potentialities of a **recombinant** S. bovis-derived **glutathione S -transferase** (rSb28GST), member of a molecular family already shown to have protective capacities in the **S. mansoni** and S. **japonicum** models. Injection of the rSb28GST in Freund's Complete Adjuvant resulted in good specific IgG responses allowing all the animals to display high antibody titres on the day of experimental challenge with S. bovis cercariae. No statistically significant differences were observed in the faecal egg output. Although tissue egg counts in **vaccinated** animals were lower than in controls, the difference was not statistically significant, apart from the number of eggs trapped in the liver ($P < 0.05$). Likewise, PCV values remained parallel between the two groups. However, **immunized** goats gained 1.4 kg of body weight throughout the experiment whereas controls lost 1.2 kg ($P < 0.05$). In addition, the mean worm burden, assessed by perfusion 20 weeks after infection, was significantly reduced by 48% in the **vaccinated** group, the sex ratio being unaffected. It appears that a **recombinant** homologous protein can affect, in a natural host, the course of an experimental infection with a local strain of S. bovis, by affecting worm viability but not fecundity. These results also point to the striking differences in the effect of **vaccination** according to animal species. Because it has the capacity to prevent growth impairment due to **schistosome** pathogenicity, the molecule can be proposed as a valuable tool in the development of **vaccine**-based control programs in endemic areas.

L30 ANSWER 12 OF 13 MEDLINE
ACCESSION NUMBER: 94000721 MEDLINE
DOCUMENT NUMBER: 94000721 PubMed ID: 7764098
TITLE: High level production of hybrid potyvirus-like particles carrying repetitive copies of foreign antigens in Escherichia coli.
AUTHOR: Jagadish M N; Hamilton R C; Fernandez C S; Schoofs P; Davern K M; Kalnins H; Ward C W; Nisbet I T
CORPORATE SOURCE: CSIRO, Division of Biomolecular Engineering, Parkville, Victoria, Australia.
SOURCE: BIO/TECHNOLOGY, (1993 Oct) 11 (10) 1166-70. Journal code: 8309273. ISSN: 0733-222X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Biotechnology

ENTRY MONTH: 199311
ENTRY DATE: Entered STN: 19950809
Last Updated on STN: 19980206
Entered Medline: 19931123

AB Synthesis in E. coli of native coat protein of Johnsongrass mosaic virus, and hybrid protein molecules containing foreign antigens, resulted in the intracellular formation of potyvirus-like particles (PVLPs). The foreign antigens used were an octapeptide epitope from Plasmodium falciparum and a decapeptide hormone (luteinizing hormone releasing hormone) at the N- or at both N- and C-terminal regions of the coat protein molecule, and a full length protein antigen (Sj26-**glutathione S-transferase** of 26 kD from **Schistosoma japonicum**) replacing the N-terminal 62 amino acids of the coat protein. Electron microscopy of ultrathin sections of E. coli revealed that PVLPs resulting from coat protein molecules containing peptide fusions appeared in vast arrays of parallel strands within the cytoplasm sometimes extending the length of the cell and at times the cells were strung together, with "threads" of PVLPs appearing to connect individual bacterial cells. PVLPs resulting from the fusion of the 26 kD antigen Sj26 to coat protein were shorter and wider. The physical form of the high molecular weight PVLPs enabled purification by simple size exclusion column chromatography. The Sj26-PVLPs **administered** to mice without adjuvant elicited antibody responses comparable to monomeric Sj26 **administered** with Freund's Complete Adjuvant.

L30 ANSWER 13 OF 13 MEDLINE
ACCESSION NUMBER: 93064810 MEDLINE
DOCUMENT NUMBER: 93064810 PubMed ID: 1437243
TITLE: The influence of adjuvant on humoral responses to **glutathione-S-transferase** fusion proteins.
AUTHOR: Varley C A; Dunne D W; Havercroft J C
CORPORATE SOURCE: Department of Pathology, University of Cambridge, UK.
SOURCE: PARASITE IMMUNOLOGY, (1992 Sep) 14 (5) 557-62.
Journal code: 7910948. ISSN: 0141-9838.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199212
ENTRY DATE: Entered STN: 19930122
Last Updated on STN: 19980206
Entered Medline: 19921204

AB Mice were **immunized** with one of two **Schistosoma mansoni** antigens, Sm20 and Sm50, expressed as fusion proteins with **Schistosoma japonicum** 26,000 Dalton **glutathione-S-transferase** (**GST**) or with **GST** alone. Antibody responses to **GST** were shown to be critically dependent on the adjuvant used. In Sm20-**GST immunized** mice, we noted a striking bias to respond either to Sm20 or to **GST** according to the adjuvant used and responses to both in the same individual were rare. Fusion with Sm50, which is relatively non-**immunogenic**, appeared to down-regulate responses to **GST**.

(FILE 'USPATFULL' ENTERED AT 12:09:21 ON 10 APR 2003)

L1	6748	SEA FILE=HCAPLUS ABB=ON PLU=ON SCHISTOSOM? OR (SCHISTOSOM? OR S)(W)MANSONI
L2	17	SEA FILE=REGISTRY ABB=ON PLU=ON "GLUTATHIONE-S-TRANSFERASE"?/CN
L14	162	SEA FILE=REGISTRY ABB=ON PLU=ON ELASTASE?/CN
L33	87	SEA FILE=USPATFULL ABB=ON PLU=ON L1(L)(L14 OR ELASTASE)
L34	61	SEA FILE=USPATFULL ABB=ON PLU=ON L33(L)(L2 OR FUS##(5A)(PROTEIN OR POLYPROTEIN OR POLYPEPTIDE OR PEPTIDE) OR GLUTATHION? S TRANSFERASE OR GST)
L35	52	SEA FILE=USPATFULL ABB=ON PLU=ON L34(L)RECOMBINAN?
L36	21	SEA FILE=USPATFULL ABB=ON PLU=ON L35(L)JAPONICUM
L37	21	SEA FILE=USPATFULL ABB=ON PLU=ON L36(L)(VACCIN? OR IMMUN?)
L38	19	SEA FILE=USPATFULL ABB=ON PLU=ON L37(L)ADMIN?

L38 ANSWER 1 OF 19 USPATFULL

ACCESSION NUMBER: 2003:93795 USPATFULL

TITLE: Novel human genes and gene expression products I

INVENTOR(S): Williams, Lewis T., Mill Valley, CA, UNITED STATES
Escobedo, Jaime, Alamo, CA, UNITED STATES
Innis, Michael A., Moraga, CA, UNITED STATES
Garcia, Pablo Dominguez, San Francisco, CA, UNITED STATES
Sudduth-Klinger, Julie, Kensington, CA, UNITED STATES
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Kennedy, Giulia C., San Francisco, CA, UNITED STATES
Pot, David, San Francisco, CA, UNITED STATES
Kassam, Atlaf, Oakland, CA, UNITED STATES
Lamson, George, Moraga, CA, UNITED STATES
Drmanac, Radoje, Palo Alto, CA, UNITED STATES
Crkvenjakov, Radomir, Sunnyvale, CA, UNITED STATES
Dickson, Mark, Hollister, CA, UNITED STATES
Drmanac, Snezana, Palo Alto, CA, UNITED STATES
Labat, Ivan, Sunnyvale, CA, UNITED STATES
Leshkowitz, Dena, Sunnyvale, CA, UNITED STATES
Kita, David, Foster City, CA, UNITED STATES
Garcia, Veronica, Sunnyvale, CA, UNITED STATES
Jones, Lee William, Sunnyvale, CA, UNITED STATES
Stache-Crain, Birgit, Sunnyvale, CA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003065156	A1	20030403
APPLICATION INFO.:	US 2002-76555	A1	20020215 (10)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1998-217471, filed on 21 Dec 1998, PENDING

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-68755P	19971223 (60)

	US 1998-80664P	19980403 (60)
	US 1998-105234P	19981021 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	BOZICEVIC, FIELD & FRANCIS LLP, 200 MIDDLEFIELD RD, SUITE 200, MENLO PARK, CA, 94025	
NUMBER OF CLAIMS:	22	
EXEMPLARY CLAIM:	1	
LINE COUNT:	15408	

AB This invention relates to novel human polynucleotides and variants thereof, their encoded polypeptides and variants thereof, to genes corresponding to these polynucleotides and to proteins expressed by the genes. The invention also relates to diagnostic and therapeutic agents employing such novel human polymucleotides, their corresponding genes or gene products, e.g., these genes and proteins, including probes, antisense constructs, and antibodies.

INCL INCLM: 536/023.100
INCLS: 435/006.000; 435/007.100
NCL NCLM: 536/023.100
NCLS: 435/006.000; 435/007.100

L38 ANSWER 2 OF 19 USPATFULL

ACCESSION NUMBER:	2003:53521 USPATFULL		
TITLE:	Antibody methods for selectively inhibiting VEGF		
INVENTOR(S):	Thorpe, Philip E., Dallas, TX, United States Brekken, Rolf A., Seattle, WA, United States		
PATENT ASSIGNEE(S):	Board of Regents, The University of Texas System, Austin, TX, United States (U.S. corporation)		
	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6524583	B1	20030225
APPLICATION INFO.:	US 2000-561499		20000428 (9)
	NUMBER		DATE
PRIORITY INFORMATION:	US 1999-131432P		19990428 (60)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	GRANTED		
PRIMARY EXAMINER:	Chan, Christina		
ASSISTANT EXAMINER:	Huynh, Phuong N		
LEGAL REPRESENTATIVE:	Williams, Morgan and Amerson		
NUMBER OF CLAIMS:	40		
EXEMPLARY CLAIM:	1,4		
NUMBER OF DRAWINGS:	7 Drawing Figure(s); 4 Drawing Page(s)		
LINE COUNT:	10431		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed are antibodies that specifically inhibit VEGF binding to only one (VEGFR2) of the two VEGF receptors. The antibodies effectively inhibit angiogenesis and induce tumor regression, and yet have improved safety due to their specificity. The present invention thus provides new antibody-based compositions, methods and combined protocols for treating cancer and other angiogenic diseases. Advantageous immunoconjugate and prodrug compositions and methods using the new VEGF-specific antibodies are also provided.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/145.100
INCLS: 424/133.100; 424/135.100; 424/141.100; 530/387.100; 530/388.100; 530/388.150; 530/388.250; 530/809.000; 530/864.000; 530/865.000; 530/866.000
NCL NCLM: 424/145.100
NCLS: 424/133.100; 424/135.100; 424/141.100; 530/387.100; 530/388.100; 530/388.150; 530/388.250; 530/809.000; 530/864.000; 530/865.000; 530/866.000

L38 ANSWER 3 OF 19 USPATFULL
ACCESSION NUMBER: 2003:30402 USPATFULL
TITLE: Virulence-associated nucleic acid sequences and uses thereof
INVENTOR(S): Ausubel, Frederick M., Newton, MA, UNITED STATES
Rahme, Laurence G., Brookline, MA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003022349	A1	20030130
APPLICATION INFO.:	US 2001-975719	A1	20011010 (9)

RELATED APPLN. INFO.: Division of Ser. No. US 1998-199637, filed on 25 Nov 1998, GRANTED, Pat. No. US 6355411

	NUMBER	DATE
PRIORITY INFORMATION:	US 1997-66517P	19971125 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: CLARK & ELBING LLP, 101 FEDERAL STREET, BOSTON, MA, 02110
NUMBER OF CLAIMS: 43
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 133 Drawing Page(s)
LINE COUNT: 2865
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed are bacterial virulence polypeptides and nucleic acid sequences (e.g., DNA) encoding such polypeptides, and methods for producing such polypeptides by recombinant techniques. Also provided are methods for utilizing such polypeptides to screen for antibacterial or bacteriostatic compounds.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 435/219.000
INCLS: 435/069.100; 435/252.300; 435/320.100; 536/023.700
NCL NCLM: 435/219.000
NCLS: 435/069.100; 435/252.300; 435/320.100; 536/023.700

L38 ANSWER 4 OF 19 USPATFULL
ACCESSION NUMBER: 2002:330253 USPATFULL
TITLE: Methods of treating liver disease and liver damage with growth hormone and foxM1B
INVENTOR(S): Costa, Robert H., Oak Park, IL, UNITED STATES
Wang, Xinhe, Chicago, IL, UNITED STATES
Adami, Guy, Brookfield, IL, UNITED STATES
Tan, Yongjun, Arlington Heights, IL, UNITED STATES
Krupczak-Hollis, Katherine, Chicago, IL, UNITED

STATES
PATENT ASSIGNEE(S): Board of Trustees for the University of Illinois (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002187936	A1	20021212
APPLICATION INFO.:	US 2002-151587	A1	20020517 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-291789P	20010517 (60)
	US 2001-305821P	20010716 (60)
	US 2001-315484P	20010828 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: MCDONNELL BOEHNEN HULBERT & BERGHOFF, 300 SOUTH WACKER DRIVE, SUITE 3200, CHICAGO, IL, 60606
NUMBER OF CLAIMS: 144
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 23 Drawing Page(s)
LINE COUNT: 2973
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The invention provides a method of treating liver damage or disease in a patient by stimulating liver regeneration. Specifically, the invention provides a method of inducing liver cell proliferation comprising contacting liver cells that express FoxM1B protein with growth hormone. The invention also provides methods of screening for compounds that induce FoxM1B protein expression, nuclear localization, or both expression and nuclear localization. The invention further provides pharmaceutical compositions comprising selected compounds and methods of using such compositions.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 514/012.000
INCLS: 514/044.000; 435/455.000; 435/370.000; 424/093.200; 435/456.000
NCL NCLM: 514/012.000
NCLS: 514/044.000; 435/455.000; 435/370.000; 424/093.200; 435/456.000

L38 ANSWER 5 OF 19 USPATFULL
ACCESSION NUMBER: 2002:322063 USPATFULL
TITLE: Schistosomiasis vaccine
INVENTOR(S): Doenhoff, Michael, Wales, UNITED KINGDOM
Sayers, Jon, Sheffield, UNITED KINGDOM
PATENT ASSIGNEE(S): University of Wales (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002182224	A1	20021205
APPLICATION INFO.:	US 2001-20441	A1	20011218 (10)
RELATED APPLN. INFO.:	Continuation of Ser. No. US 1999-413810, filed on 7 Oct 1999, PENDING		

	NUMBER	DATE

PRIORITY INFORMATION: GB 1998-21821 19981007
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: NIXON & VANDERHYE P.C., 8th Floor, 1100 North Glebe Road, Arlington, VA, 22201-4714
NUMBER OF CLAIMS: 17
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 8 Drawing Page(s)
LINE COUNT: 1051
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A vaccine for eliciting immunity against Schistosoma parasites, comprises a recombinant fusion protein capable of comprising the 27/28 kDa cercarial elastase sequence of S. mansoni or an active fragment, homologue or variant thereof, fused to a suitable bacterial, phage or viral protein, together with a pharmaceutically acceptable excipient or carrier. The vaccine can be used to combat S. mansoni, S. japonicum and/or S. haematobium in mammals, especially humans.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/191.100
NCL NCLM: 424/191.100

L38 ANSWER 6 OF 19 USPATFULL
ACCESSION NUMBER: 2002:167884 USPATFULL
TITLE: Antibody conjugate kits for selectively inhibiting VEGF
INVENTOR(S): Thorpe, Philip E., Dallas, TX, United States
Brekken, Rolf A., Seattle, WA, United States
PATENT ASSIGNEE(S): Board of Regents, The University of Texax System, Austin, TX, United States (U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 6416758	B1	20020709	
APPLICATION INFO.:	US 2000-561526		20000428	(9)

	NUMBER	DATE	
PRIORITY INFORMATION:	US 1999-131432P	19990428	(60)

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Chan, Christina Y.
ASSISTANT EXAMINER: Huynh, Phuong
LEGAL REPRESENTATIVE: Williams, Morgan and Amerson
NUMBER OF CLAIMS: 50
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 7 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 10439
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed are antibodies that specifically inhibit VEGF binding to only one (VEGFR2) of the two VEGF receptors. The antibodies effectively inhibit angiogenesis and induce tumor regression, and yet have improved safety due to their specificity. The present invention thus provides new antibody-based compositions, methods and combined protocols for treating cancer and other angiogenic diseases. Advantageous immunoconjugate and prodrug compositions.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/145.100
INCLS: 424/001.490; 424/001.530; 424/001.690; 424/009.200; 424/009.300; 424/133.100; 424/134.100; 424/135.100; 424/141.100; 424/142.100; 424/145.100; 424/178.100; 424/179.100; 424/181.100; 424/183.100; 424/195.110; 435/007.230; 435/069.100; 435/069.600; 435/069.700; 435/070.210; 435/810.000; 530/387.300; 530/388.100; 530/388.150; 530/388.240; 530/391.300; 530/391.700; 530/391.900
NCL NCLM: 424/145.100
NCLS: 424/001.490; 424/001.530; 424/001.690; 424/009.200; 424/009.300; 424/133.100; 424/134.100; 424/135.100; 424/141.100; 424/142.100; 424/178.100; 424/179.100; 424/181.100; 424/183.100; 424/195.110; 435/007.230; 435/069.100; 435/069.600; 435/069.700; 435/070.210; 435/810.000; 530/387.300; 530/388.100; 530/388.150; 530/388.240; 530/391.300; 530/391.700; 530/391.900

L38 ANSWER 7 OF 19 USPATFULL
ACCESSION NUMBER: 2002:50766 USPATFULL
TITLE: Virulence-associated nucleic acid sequences and uses thereof
INVENTOR(S): Ausubel, Frederick, Newton, MA, United States
Goodman, Howard M., Newton, MA, United States
Rahme, Laurence G., Brookline, MA, United States
Mahajan-Miklos, Shalina, West Roxbury, MA, United States
Tan, Man-Wah, Somerville, MA, United States
Cao, Hui, Malden, MA, United States
Drenkard, Eliana, Cambridge, MA, United States
Tsongalis, John, Southbridge, MA, United States
PATENT ASSIGNEE(S): The General Hospital Corporation, Boston, MA, United States (U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 6355411	B1	20020312	
APPLICATION INFO.:	US 1998-199637		19981125	(9)

	NUMBER	DATE	
PRIORITY INFORMATION:	US 1997-66517P	19971125	(60)

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Brusca, John S.
LEGAL REPRESENTATIVE: Clark & Elbing, LLP
NUMBER OF CLAIMS: 6
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 171 Drawing Figure(s); 133 Drawing Page(s)
LINE COUNT: 2721
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed are bacterial virulence polypeptides and nucleic acid sequences (e.g., DNA) encoding such polypeptides, and methods for producing such polypeptides by recombinant techniques. Also provided are methods for utilizing such polypeptides to screen for antibacterial or bacteriostatic compounds.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 435/004.000
INCLS: 530/350.000
NCL NCLM: 435/004.000
NCLS: 530/350.000

L38 ANSWER 8 OF 19 USPATFULL
ACCESSION NUMBER: 2002:45597 USPATFULL
TITLE: Bone morphogenetic proteins and their use in bone growth
INVENTOR(S): Nimni, Marcel E., 2800 Neilson Way, #908, Santa Monica, CA, United States 90405
Hall, Frederick L., 345 Pioneer Dr., Suite 1803, W. Glendale, CA, United States 91203
Wu, Lingtau, 1114 Valencia Way, Arcadia, CA, United States 91006
Han, Bo, 1351 Elm Ave., San Gabriel, CA, United States 91775
Shors, Edwin C., 2121 President St., Costa Mesa, CA, United States 92627

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6352972	B1	20020305
APPLICATION INFO.:	US 1997-868452		19970603 (8)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1995-470837, filed on 6 Jun 1995, now patented, Pat. No. US 5800811
DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Romeo, David S.
LEGAL REPRESENTATIVE: Oppenheimer Wolff & Donnelly LLP
NUMBER OF CLAIMS: 2
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 1 Drawing Figure(s); 1 Drawing Page(s)
LINE COUNT: 1985
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB A bone morphogenetic fusion protein and a method of preparation of the bone morphogenetic fusion protein. The bone morphogenetic fusion protein comprises a purification tag and a bone morphogenetic active fragment. A method of preparing bone morphogenetic fusion protein comprises purifying and renaturing bone morphogenetic protein to provide an active bone morphogenetic fusion protein preparation. Methods of use of the bone morphogenetic fusion protein are also provided.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 514/012.000
INCLS: 424/484.000; 424/426.000; 530/350.000
NCL NCLM: 514/012.000
NCLS: 424/426.000; 424/484.000; 530/350.000

L38 ANSWER 9 OF 19 USPATFULL
ACCESSION NUMBER: 2002:19060 USPATFULL
TITLE: Antibody conjugate compositions for selectively inhibiting VEGF
INVENTOR(S): Thorpe, Philip E., Dallas, TX, United States
Brekken, Rolf A., Seattle, WA, United States

PATENT ASSIGNEE(S): Board of Regents, The University of Texas System, Austin, TX, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6342221	B1	20020129
APPLICATION INFO.:	US 2000-561108		20000428 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 1999-131432P	19990428 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Chan, Christina Y.
ASSISTANT EXAMINER: Huynh, Phuong N.
LEGAL REPRESENTATIVE: Williams, Morgan and Amerson
NUMBER OF CLAIMS: 68
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 7 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 10492
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed are antibodies that specifically inhibit VEGF binding to only one (VEGFR2) of the two VEGF receptors. The antibodies effectively inhibit angiogenesis and induce tumor regression, and yet have improved safety due to their specificity. The present invention thus provides new antibody-based compositions, methods and combined protocols for treating cancer and other angiogenic diseases. Advantageous immunoconjugate and prodrug compositions and methods using the new VEGF-specific antibodies are also provided.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/178.100
INCLS: 424/130.100; 424/179.100; 424/181.100; 424/183.100; 424/193.100; 424/195.110; 424/001.490; 424/001.530; 424/009.300; 424/009.340; 424/009.600; 435/007.210; 435/069.100; 435/070.210; 435/810.000; 435/007.230; 435/007.100; 530/391.100; 530/391.300; 530/391.500; 530/391.700; 530/391.900
NCL NCLM: 424/178.100
NCLS: 424/001.490; 424/001.530; 424/009.300; 424/009.340; 424/009.600; 424/130.100; 424/179.100; 424/181.100; 424/183.100; 424/193.100; 424/195.110; 435/007.100; 435/007.210; 435/007.230; 435/069.100; 435/070.210; 435/810.000; 530/391.100; 530/391.300; 530/391.500; 530/391.700; 530/391.900

L38 ANSWER 10 OF 19 USPATFULL
ACCESSION NUMBER: 2002:19058 USPATFULL
TITLE: Antibody compositions for selectively inhibiting VEGF
INVENTOR(S): Thorpe, Philip E., Dallas, TX, United States
Brekken, Rolf A., Seattle, WA, United States
PATENT ASSIGNEE(S): Board of Regents, The University of Texas System, Austin, TX, United States (U.S. corporation)

	NUMBER	KIND	DATE

PATENT INFORMATION:	US 6342219	B1	20020129
APPLICATION INFO.:	US 2000-561500		20000428 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 1999-131432P	19990428 (60)

DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Chan, Christina Y.
ASSISTANT EXAMINER: Huynh, Phuong N.
LEGAL REPRESENTATIVE: Williams, Morgan and Amerson
NUMBER OF CLAIMS: 50
EXEMPLARY CLAIM: 20
NUMBER OF DRAWINGS:, 7 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 10403
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed are antibodies that specifically inhibit VEGF binding to only one (VEGFR2) of the two VEGF receptors. The antibodies effectively inhibit angiogenesis and induce tumor regression, and yet have improved safety due to their specificity. The present invention thus provides new antibody-based compositions, methods and combined protocols for treating cancer and other angiogenic diseases. Advantageous immunoconjugate and prodrug compositions and methods using the new VEGF-specific antibodies are also provided.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/145.100
INCLS: 424/133.100; 424/134.100; 424/135.100; 424/141.100; 424/142.100; 424/143.100; 435/069.100; 435/335.000; 435/810.000; 530/387.100; 530/387.300; 530/388.100; 530/388.150; 530/388.230; 530/391.100; 530/391.300; 530/391.500; 530/391.700; 530/809.000; 530/864.000; 530/865.000; 530/866.000
NCL NCLM: 424/145.100
NCLS: 424/133.100; 424/134.100; 424/135.100; 424/141.100; 424/142.100; 424/143.100; 435/069.100; 435/335.000; 435/810.000; 530/387.100; 530/387.300; 530/388.100; 530/388.150; 530/388.230; 530/391.100; 530/391.300; 530/391.500; 530/391.700; 530/809.000; 530/864.000; 530/865.000; 530/866.000

L38 ANSWER 11 OF 19 USPATFULL
ACCESSION NUMBER: 2001:196603 USPATFULL
TITLE: Cancer treatment methods using therapeutic conjugates that bind to aminophospholipids
INVENTOR(S): Thorpe, Philip E., Dallas, TX, United States
Ran, Sophia, Dallas, TX, United States
PATENT ASSIGNEE(S): Board of Regents, The University of Texas System, Austin, TX, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6312694	B1	20011106
APPLICATION INFO.:	US 1999-351457		19990712 (9)

	NUMBER	DATE

PRIORITY INFORMATION: US 1998-92589P 19980713 (60)
US 1998-110600P 19981202 (60)
DOCUMENT TYPE: Utility
FILE SEGMENT: GRANTED
PRIMARY EXAMINER: Bansal, Geetha P.
LEGAL REPRESENTATIVE: Williams, Morgan & Amerson
NUMBER OF CLAIMS: 50
EXEMPLARY CLAIM: 1,2,3,4
NUMBER OF DRAWINGS: 6 Drawing Figure(s); 3 Drawing Page(s)
LINE COUNT: 8243
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB Disclosed is the surprising discovery that aminophospholipids, such as phosphatidylserine and phosphatidylethanolaminie, are specific, accessible and stable markers of the luminal surface of tumor blood vessels. The present invention thus provides aminophospholipid-targeted diagnostic and therapeutic constructs for use in tumor intervention. Antibody-therapeutic agent conjugates and constructs that bind to aminophospholipids are particularly provided, as are methods of specifically delivering therapeutic agents, including toxins and coagulants, to the stably-expressed aminophospholipids of tumor blood vessels, thereby inducing thrombosis, necrosis and tumor regression.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/178.100
INCLS: 424/133.100; 424/134.100; 424/135.100; 424/136.100; 424/137.100; 424/141.100; 424/142.100; 424/143.100; 424/181.100; 424/193.100; 514/012.000; 530/387.100; 530/388.100
NCL NCLM: 424/178.100
NCLS: 424/133.100; 424/134.100; 424/135.100; 424/136.100; 424/137.100; 424/141.100; 424/142.100; 424/143.100; 424/181.100; 424/193.100; 514/012.000; 530/387.100; 530/388.100

L38 ANSWER 12 OF 19 USPATFULL
ACCESSION NUMBER: 2001:188410 USPATFULL
TITLE: Complexes of peptide-binding fragments of heat shock proteins and their use as immunotherapeutic agents
INVENTOR(S): Srivastava, Pramod K., Avon, CT, United States

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2001034042	A1	20011025
APPLICATION INFO.:	US 2001-759010	A1	20010112 (9)

RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 2000-488393, filed on 20 Jan 2000, PENDING
DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: PENNIE AND EDMONDS, 1155 AVENUE OF THE AMERICAS, NEW YORK, NY, 100362711
NUMBER OF CLAIMS: 46
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 4 Drawing Page(s)
LINE COUNT: 3685
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention relates to pharmaceutical compositions

comprising peptide-binding fragments of heat shock proteins (HSPs) and noncovalent complexes of peptide-binding fragments of HSPs in noncovalent association with antigenic molecules. The invention further relates to methods for the use of such pharmaceutical compositions as immunotherapeutic agents for the treatment and prevention of infectious diseases and cancer.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 435/068.100
INCLS: 514/012.000
NCL NCLM: 435/068.100
NCLS: 514/012.000

L38 ANSWER 13 OF 19 USPATFULL
ACCESSION NUMBER: 2001:1862 USPATFULL
TITLE: Preparation and use of recombinant influenza A virus M2 construct vaccines
INVENTOR(S): Frace, A. Michael, Atlanta, GA, United States
Klimov, Alexander I., Atlanta, GA, United States
Katz, Jacqueline M., Atlanta, GA, United States
PATENT ASSIGNEE(S): Centers For Disease Control and Prevention, Atlanta, GA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6169175	B1	20010102
APPLICATION INFO.:	US 1997-906930		19970806 (8)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Park, Hankyel
LEGAL REPRESENTATIVE: McDonnell Boehnen Hulbert & Berghoff
NUMBER OF CLAIMS: 8
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 5 Drawing Figure(s); 4 Drawing Page(s)
LINE COUNT: 1085
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides a method of increasing the recombinant expression and solubility of influenza A virus M2 polypeptide comprising nucleic acids encoding variants of the M2 protein of influenza A virus in which transmembrane and other hydrophobic domains have been deleted. The present invention also provides purified polypeptides encoded by the nucleic acids, which polypeptides are immunogenic and are less hydrophobic than full-length M2. Also provided are vaccines comprising variants of M2 expressed in prokaryotic hosts. Further provided are methods of preventing influenza A infection using vaccines comprised of variants of M2. Also provided are antibodies raised against the variants of M2, and use of such antibodies in diagnosis and treatment of influenza A infections.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 536/023.720
INCLS: 424/009.340; 424/209.100; 435/069.300; 435/252.330; 435/325.000; 435/320.100
NCL NCLM: 536/023.720
NCLS: 424/009.340; 424/209.100; 435/069.300; 435/252.330; 435/320.100; 435/325.000

L38 ANSWER 14 OF 19 USPATFULL
ACCESSION NUMBER: 2000:164081 USPATFULL
TITLE: Tissue factor methods and compositions for coagulation and tumor treatment
INVENTOR(S): Thorpe, Philip E., Dallas, TX, United States
King, Steven W., Foothill Ranch, CA, United States
Gao, Boning, Dallas, TX, United States
PATENT ASSIGNEE(S): Board Of Regents, The University of Texas System, Austin, TX, United States (U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 6156321		20001205	
APPLICATION INFO.:	US 1998-9822		19980120	(9)

	NUMBER	DATE	
PRIORITY INFORMATION:	US 1997-42427P	19970327	(60)
	US 1997-36205P	19970127	(60)
	US 1997-35920P	19970122	(60)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Bansal, Geetha P.
LEGAL REPRESENTATIVE: Williams, Morgan and Amerson
NUMBER OF CLAIMS: 47
EXEMPLARY CLAIM: 1,3
NUMBER OF DRAWINGS: 25 Drawing Figure(s); 15 Drawing Page(s)
LINE COUNT: 7500
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention embodies the surprising discovery that Tissue Factor (TF) compositions and variants thereof specifically localize to the blood vessels within a vascularized tumor following systemic administration. The invention therefore provides methods and compositions comprising coagulant-deficient Tissue Factor for use in effecting specific coagulation and for use in tumor treatment. The TF compositions and methods of present invention may be used alone, as TF conjugates with improved half-life, or in combination with other agents, such as conventional chemotherapeutic drugs, targeted immunotoxins, targeted coaguligands, and/or in combination with Factor VIIa (FVIIa) or FVIIa activators.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/198.100
INCLS: 424/178.100; 424/130.100; 424/134.100; 424/278.100; 530/381.000; 530/324.000; 514/012.000; 514/021.000; 514/384.000
NCL NCLM: 424/198.100
NCLS: 424/130.100; 424/134.100; 424/178.100; 424/278.100; 514/012.000; 514/021.000; 514/384.000; 530/324.000; 530/381.000

L38 ANSWER 15 OF 19 USPATFULL
ACCESSION NUMBER: 2000:137820 USPATFULL
TITLE: Combined tissue factor and factor VIIa methods and compositions for coagulation and tumor treatment
INVENTOR(S): Thorpe, Philip E., Dallas, TX, United States

	King, Steven W., Foothill Ranch, CA, United States
	Gao, Boning, Dallas, TX, United States
PATENT ASSIGNEE(S):	Board of Regents, The University of Texas System, Austin, TX, United States (U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 6132730		20001017	
APPLICATION INFO.:	US 1998-9656		19980120	(9)

	NUMBER	DATE	
PRIORITY INFORMATION:	US 1997-42427P	19970327	(60)
	US 1997-36205P	19970127	(60)
	US 1997-35920P	19970122	(60)

DOCUMENT TYPE:	Utility
FILE SEGMENT:	Granted
PRIMARY EXAMINER:	Bansal, Geetha P.
LEGAL REPRESENTATIVE:	Williams, Morgan & Amerson
NUMBER OF CLAIMS:	31
EXEMPLARY CLAIM:	1,3
NUMBER OF DRAWINGS:	25 Drawing Figure(s); 15 Drawing Page(s)
LINE COUNT:	7436

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention embodies the surprising discovery that Tissue Factor (TF) compositions and variants thereof specifically localize to the blood vessels within a vascularized tumor following systemic administration. The invention therefore provides methods and compositions comprising coagulation-deficient Tissue Factor for use in effecting specific coagulation and for use in tumor treatment. The TF compositions and methods of present invention may be used alone, as TF conjugates with improved half-life, or in combination with other agents, such as conventional chemotherapeutic drugs, targeted immunotoxins, targeted coaguligands, and/or in combination with Factor VIIa (FVIIa) or FVII activators.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

INCL	INCLM:	424/198.100
	INCLS:	424/185.100; 424/178.100; 424/130.100; 514/012.000; 514/834.000; 530/827.000; 530/829.000; 530/381.000; 530/407.000
NCL	NCLM:	424/198.100
	NCLS:	424/130.100; 424/178.100; 424/185.100; 514/012.000; 514/834.000; 530/381.000; 530/407.000; 530/827.000; 530/829.000

L38 ANSWER 16 OF 19 USPATFULL

ACCESSION NUMBER:	2000:137819 USPATFULL
TITLE:	Combined tissue factor and chemotherapeutic methods and compositions for coagulation and tumor treatment
INVENTOR(S):	Thorpe, Philip E., Dallas, TX, United States
	King, Steven W., Foothill Ranch, CA, United States
	Gao, Boning, Dallas, TX, United States
PATENT ASSIGNEE(S):	Board of Regents, The University of Texas System,

Austin, TX, United States (U.S. corporation)

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 6132729		20001017	
APPLICATION INFO.:	US 1998-9217		19980120	(9)

	NUMBER	DATE	
PRIORITY INFORMATION:	US 1997-42427P	19970327	(60)
	US 1997-36205P	19970127	(60)
	US 1997-35920P	19970122	(60)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Bansal, Geetha P.
LEGAL REPRESENTATIVE: Williams, Morgan & Amerson
NUMBER OF CLAIMS: 46
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 25 Drawing Figure(s); 15 Drawing Page(s)
LINE COUNT: 7498
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The invention embodies the surprising discovery that Tissue Factor (TF) compositions and variants thereof specifically localize to the blood vessels within a vascularized tumor following systemic administration. The invention therefore provides methods and compositions comprising coagulation-deficient Tissue Factor for use in effecting specific coagulation and for use in tumor treatment. The TF compositions and methods of present invention may be used alone, as TF conjugates with improved half-life, or in combination with other agents, such as conventional chemotherapeutic drugs, targeted immunotoxins, targeted coaguligands, and/or in combination with Factor VIIa (FVIIa) or FVII activators.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/198.100
INCLS: 424/185.100; 424/178.100; 424/130.100; 514/002.000; 514/834.000; 530/827.000; 530/829.000; 530/381.000; 530/407.000
NCL NCLM: 424/198.100
NCLS: 424/130.100; 424/178.100; 424/185.100; 514/002.000; 514/834.000; 530/381.000; 530/407.000; 530/827.000; 530/829.000

L38 ANSWER 17 OF 19 USPATFULL
ACCESSION NUMBER: 1998:104387 USPATFULL
TITLE: Artificial skin prepared from coclagen matrix containing transforming growth factor-.beta. having a collagen binding site
INVENTOR(S): Hall, Frederick L., 345 Pioneer Dr., Suite 1803 W., Glendale, CA, United States 91203 Nimni Nimni, Marcel E., 2800 Neilson Way, #908, Santa Monica, CA, United States 90405
Tuan, Tai-Lan, 1020 Windsor St., Anaheim, CA, United States 92805
Wu, Lingtau, 1114 Valencia Way, Arcadia, CA, United States 91006
Cheung, David T., 10 W. Palm Dr., Arcadia, CA,

United States 91007

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5800811		19980901
APPLICATION INFO.:	US 1995-470837		19950606 (8)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Naff, David M.
LEGAL REPRESENTATIVE: Merchant, Gould, Smith, Edell, Welter & Schmidt
NUMBER OF CLAIMS: 20
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 1 Drawing Figure(s); 1 Drawing Page(s)
LINE COUNT: 1510
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB An artificial skin is prepared by impregnating a collagen matrix with a transforming growth factor-.beta. having a collagen-binding site to bind the growth factor to the collagen matrix, incubating the impregnated matrix with a source of fibroblasts and mesenchymal stem cells to form a captured population of mesenchymal stem cells within the impregnated matrix and incubating the resultant matrix with a source of keratinocytes which epithelialize the matrix to form an artificial skin. The collagen matrix is preferably in the form of a collagen sheet. The transforming growth factor-.beta. can be transforming growth factor-.beta..sub.1, transforming growth factor-.beta..sub.2 or transforming growth factor-.beta..sub.3. Preferably, the transforming growth factor-.beta. having a collagen binding site is a fusion protein having a purification tag, at least one proteinase site, an extracellular matrix binding site and a transforming growth factor active fragment. The extracellular matrix binding site binds collagen, fibronectin or a cell surface. A method of preparing the fusion protein involves purifying and renaturing transforming growth factor-.beta. protein to provide an active fusion protein.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/093.700
INCLS: 424/484.000; 424/085.100; 424/520.000; 435/069.100; 435/069.700; 435/174.000; 435/177.000; 435/366.000; 435/395.000
NCL NCLM: 424/093.700
NCLS: 424/085.100; 424/484.000; 424/520.000; 435/069.100; 435/069.700; 435/174.000; 435/177.000; 435/366.000; 435/395.000

L38 ANSWER 18 OF 19 USPATFULL
ACCESSION NUMBER: 96:5884 USPATFULL
TITLE: Chemotactic, antibiotic and lipopolysaccharide-binding peptide fragments of CAP37
INVENTOR(S): Pereira, Heloise A., Decatur, GA, United States
Spitznagel, John K., Decatur, GA, United States
PATENT ASSIGNEE(S): Emory University, Atlanta, GA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5484885		19960116

APPLICATION INFO.: US 1992-855417 19920319 (7)
RELATED APPLN. INFO.: Continuation-in-part of Ser. No. US 1990-543151, filed on 25 Jun 1990, now abandoned which is a continuation-in-part of Ser. No. US 1989-375739, filed on 5 Jul 1989, now abandoned
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Furman, Keith C.
LEGAL REPRESENTATIVE: Needle & Rosenberg
NUMBER OF CLAIMS: 2
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 20 Drawing Figure(s); 20 Drawing Page(s)
LINE COUNT: 2498
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed is a homogeneously pure monocyte chemotactic protein, CAP37, and the entire coding sequences for unprocessed and mature human CAP37 protein. Further, the recombinant production, from nucleic acid coding sequences, of mature CAP37 protein and the mature protein with amino-terminal and/or carboxy-terminal extensions is described. Also disclosed are methods to identify and recombinantly produce bioactive peptides derived from the CAP37 protein coding sequence which are effective chemoattractants of monocytes and/or are capable of binding bacterial lipopolysaccharide. A method of preparing homogeneously pure CAP37 using hydrophobic HPLC is described. Bioactive peptide fragments of CAP37 having chemotactic, antibacterial and/or LPS-binding activity are disclosed. Finally, methods of treating wounds, diseased tissue, such as tumors, and infections are described.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 530/326.000
INCLS: 530/328.000
NCL NCLM: 530/326.000
NCLS: 530/328.000

L38 ANSWER 19 OF 19 USPATFULL
ACCESSION NUMBER: 95:92525 USPATFULL
TITLE: Method of increasing monocyte chemotaxis with CAP37 and monocyte chemotactic portions thereof
INVENTOR(S): Pereira, Heloise A., Decatur, GA, United States
Spitznagel, John K., Decatur, GA, United States
PATENT ASSIGNEE(S): Emory University, Atlanta, GA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5458874		19951017
APPLICATION INFO.:	US 1992-969931		19921030 (7)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1992-855417, filed on 18 Mar 1992 which is a continuation-in-part of Ser. No. US 1990-543151, filed on 25 Jun 1990, now abandoned which is a continuation-in-part of Ser. No. US 1989-375739, filed on 5 Jul 1989, now abandoned
DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Furman, Keith C.
LEGAL REPRESENTATIVE: Needle & Rosenberg

NUMBER OF CLAIMS: 4
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 20 Drawing Figure(s); 20 Drawing Page(s)
LINE COUNT: 2618
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed is a homogeneously pure monocyte chemotactic protein, CAP37, and the entire coding sequences for unprocessed and mature human CAP37 protein. Further, the recombinant production, from nucleic acid coding sequences, of mature CAP37 protein and the mature protein with amino-terminal and/or carboxy-terminal extensions is described. Also disclosed are methods to identify and recombinantly produce bioactive peptides derived from the CAP37 protein coding sequence which are effective chemoattractants monocytes and/or are capable of binding bacterial lipopolysaccharide. A method of preparing homogeneously pure CAP37 using hydrophobic HPLC is described. Bioactive peptide fragments of CAP37 having chemotactic, antibacterial and/or LPS-binding activity are disclosed. Finally, methods of treating wounds, diseased tissue, such as tumors, and infections are described.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
INCL INCLM: 424/085.100
INCLS: 514/012.000; 514/021.000; 435/212.000
NCL NCLM: 424/085.100
NCLS: 435/212.000; 514/012.000; 514/021.000

(FILE 'HCAPLUS, MEDLINE, BIOSIS, EMBASE, WPIDS, CONFSCI, SCISEARCH, JICST-EPLUS, JAPIO, USPATFULL' ENTERED AT 12:12:04 ON 10 APR 2003)

L39 640 S "DOENHOFF M"?/AU
L40 364 S "SAYERS J"?/AU
L41 17 S L39 AND L40
L42 987 S L39 OR L40
L43 24 S L42 AND L15
L44 35 S L41 OR L43
L45 13 DUP REM L44 (22 DUPLICATES REMOVED)

- Author (s)

L45 ANSWER 1 OF 13 USPATFULL
ACCESSION NUMBER: 2002:322063 USPATFULL
TITLE: **Schistosomiasis** vaccine
INVENTOR(S): **Doenhoff, Michael**, Wales, UNITED KINGDOM
Sayers, Jon, Sheffield, UNITED KINGDOM
PATENT ASSIGNEE(S): University of Wales (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002182224	A1	20021205
APPLICATION INFO.:	US 2001-20441	A1	20011218 (10)

RELATED APPLN. INFO.: Continuation of Ser. No. US 1999-413810, filed on 7 Oct 1999, PENDING

	NUMBER	DATE
PRIORITY INFORMATION:	GB 1998-21821	19981007

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: NIXON & VANDERHYE P.C., 8th Floor, 1100 North Glebe Road, Arlington, VA, 22201-4714

NUMBER OF CLAIMS: 17
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 8 Drawing Page(s)
LINE COUNT: 1051
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A vaccine for eliciting immunity against **Schistosoma** parasites, comprises a recombinant fusion protein capable of comprising the 27/28 kDa cercarial **elastase** sequence of **S. mansoni** or an active fragment, homologue or variant thereof, fused to a suitable bacterial, phage or viral protein, together with a pharmaceutically acceptable excipient or carrier. The vaccine can be used to combat **S. mansoni**, S. japonicum and/or S. haematobium in mammals, especially humans.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L45 ANSWER 2 OF 13 MEDLINE DUPLICATE 1
ACCESSION NUMBER: 2001647790 MEDLINE
DOCUMENT NUMBER: 21553575 PubMed ID: 11696167
TITLE: Infection induces antibodies against the cercarial secretions, but not against the cercarial **elastases** of **Schistosoma mansoni**, **Schistosoma** haematobium, **Schistosoma** japonicum and Trichobilharzia ocellata.
AUTHOR: Bahgat M; Francklow K; **Doenhoff M J**; Li Y L; Ramzy R M; Kirsten C; Ruppel A
CORPORATE SOURCE: Department of Tropical Hygiene, University of Heidelberg, Heidelberg, Germany.
SOURCE: PARASITE IMMUNOLOGY, (2001 Oct) 23 (10) 557-65. Journal code: 7910948. ISSN: 0141-9838.
PUB. COUNTRY: England: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200112
ENTRY DATE: Entered STN: 20011112
Last Updated on STN: 20020123
Entered Medline: 20011205

AB Cercarial secretions from different species of the parasite **Schistosoma** and from Trichobilharzia ocellata contain a proteolytic activity, cercarial **elastase**, which was demonstrated by a 30 kDa band in gelatin gels. Sera of patients infected with **Schistosoma mansoni**, **Schistosoma** haematobium or **Schistosoma** japonicum contain immunoglobulin G which react in ELISA with cercarial secretions from all **schistosomes** and cross-react among the different parasite species. In Western blots, however, infection sera from patients, as well as heavily infected mice or rabbits, did not react with a 30-kDa protein. Moreover, when sections from infected snails (Biomphalaria, Bulinus and Lymnaea) were analysed by immunofluorescence using the same infection sera, only the tegument of the developing cercariae was recognized, but not the acetabular glands. In contrast, when antisera against purified cercarial **elastase** from either **S. mansoni** or S. haematobium were tested with sections of infected Biomphalaria or Bulinus, fluorescence was strong in the preacetabular glands of the

cercariae of either species, but undetectable with the tegument. Cross-reactivity of both antisera extended to T. ocellata-infected Lymnaea, but not to S. japonicum-infected Oncomelania. In conclusion, although immunization with purified cercarial **elastase** results in antibody production, the enzyme does not induce an apparent antibody response following natural infection.

L45 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2003 ACS DUPLICATE 2
ACCESSION NUMBER: 2000:240788 HCAPLUS
DOCUMENT NUMBER: 132:278172
TITLE: **Schistosoma** recombinant **elastase** fusion protein as a vaccine
INVENTOR(S): **Doenhoff, Michael; Sayers, Jon**
PATENT ASSIGNEE(S): University of Wales, Bangor, UK
SOURCE: Eur. Pat. Appl., 26 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 992582	A2	20000412	EP 1999-307832	19991005
EP 992582	A3	20030326		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 2002182224	A1	20021205	US 2001-20441	20011218

PRIORITY APPLN. INFO.: GB 1998-21821 A 19981007
US 1999-413810 A1 19991007

AB A vaccine for eliciting immunity against **Schistosoma** parasites comprises a recombinant fusion protein of the 27/28-kDa cercarial **elastase** sequence of **S. mansoni** or an active fragment, homolog or variant thereof, and a suitable bacterial, phage or viral protein, together with a pharmaceutically acceptable excipient or carrier. Thus, constructs were generated comprising either exon 2 of **S. mansoni elastase** (encoding amino acid residues 52-157 of the **elastase** protein) or at least the portion encoding residues 136-151, fused to the 28-kDa glutathione-S-transferase DNA of S. japonicum. The vaccine can be used to combat **S. mansoni**, S. japonicum, and/or S. haematobium in mammals, esp. humans.

L45 ANSWER 4 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2000:157016 BIOSIS
DOCUMENT NUMBER: PREV200000157016
TITLE: Serological cross-reactivity between the cercarial **elastases** of **S. mansoni**, S. haematobium and S. margrebowiei.
AUTHOR(S): Francklow, K. (1); Szymkiewicz, I. (1); Seewaldt, S. (1); **Doenhoff, M. J. (1)**
CORPORATE SOURCE: (1) School of Biological Sciences, University of Wales, Bangor, LL57 2UW UK
SOURCE: Immunology., (Dec., 1999) Vol. 98, No. suppl. 1, pp. 114.
Meeting Info.: Joint Congress of the British Society for Immunology and the British Society for Allergy &

Clinical Immunology. Harrogate, England, UK November 30-December 03, 1999 British Society for Allergy & Clinical Immunology
. ISSN: 0019-2805.
DOCUMENT TYPE: Conference
LANGUAGE: English
SUMMARY LANGUAGE: English

L45 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2003 ACS DUPLICATE 3
ACCESSION NUMBER: 1997:364723 HCAPLUS
DOCUMENT NUMBER: 127:45708
TITLE: Cloning, heterologous expression and antigenicity of a schistosome cercarial protease
AUTHOR(S): Price, H. P.; **Doenhoff, M. J.**; **Sayers, J. R.**
CORPORATE SOURCE: School of Biological Sciences, University of Wales, Bangor, LL57 2UW, UK
SOURCE: Parasitology (1997), 114(5), 447-453
CODEN: PARAAE; ISSN: 0031-1820
PUBLISHER: Cambridge University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A gene coding for the 30-kDa Schistosoma mansoni cercarial protease was amplified using the polymerase chain reaction (PCR) from genomic DNA templates. Cloning and sequencing of several independent PCR clones revealed the presence of an intron addnl. to the one described in the original cloning of the gene. The 3 exons were cloned into expression vectors so that they could be expressed as sep. glutathione-S-transferase (GST) translational fusions. Recombinant bacteria carrying these expression plasmids expressed the fusion proteins at high levels. Western blotting of bacterial lysates with sera raised against the native S. mansoni cercarial protease showed that all 3 exons were recognized. Thus, recombinant bacteria are produced capable of providing large amts. of an S. mansoni antigen for immunol. studies and evaluation as a candidate vaccine.

L45 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2003 ACS DUPLICATE 4
ACCESSION NUMBER: 1997:637522 HCAPLUS
DOCUMENT NUMBER: 127:317795
TITLE: Schistosoma mansoni: anomalous immunogenic properties of a 27 kDa larval serine protease associated with protective immunity
AUTHOR(S): Darani, H. Y.; Curtis, R. H. C.; McNeice, C.; Price, H. P.; **Sayers, J. R.**; **Doenhoff, M. J.**
CORPORATE SOURCE: School of Biological Sciences, University of Wales, Bangor, LL57 2UW, UK
SOURCE: Parasitology (1997), 115(3), 237-247
CODEN: PARAAE; ISSN: 0031-1820
PUBLISHER: Cambridge University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A cationic Schistosoma mansoni cercarial antigen was shown to be a serine protease as it was capable of hydrolyzing N-acetyl-DL-phenylalanine .beta.-naphthyl ester (NAPBNE) after pptn. by immunoelectrophoresis, and this reaction was modulated by the serine protease inhibitors phenylmethanesulfonyl fluoride (PMSF) and

disopropylfluorophosphate (DFP). The antigen in the immunoprecipitin arcs could also be radio-isotope labeled with tritiated DFP. The peptidolytic enzyme identified in immunoelectrophoresis with polyspecific sera and radio-isotope labeled with tritiated DFP has a relative mol. size of approx. 27 kDa in SDS-PAGE, and evidence obtained after partial purifn., SDS-PAGE and immunoblotting supported this size est. for the enzyme. A rabbit antiserum raised against the peptidolytic antigen reacted against a doublet of antigens at 27/28 kDa in immunoelectrophoresis arcs and against an antigen of 60 kDa in Western immunoblots of crude cercarial homogenate. However, the latter serum pptd. the cationic antigen in immunoelectrophoresed cercarial homogenates only after pre-incubation of the homogenates with PMSF. Fractions contg. the partially purified protease also degraded radio-isotope labeled human IgG. The reactivity of a range of polyspecific and monospecific rabbit antisera in Western blots with larval exts. indicated that antibody responses against the 27/28 kDa doublet may be modulated. When immunized with material which contained the 27 kDa enzyme as a major constituent, and which was secreted by S. mansoni cercariae during transformation, only 5 of 16 mice produced antibody to this antigen that was detectable in Western blots. The 5 antibody "responder" mice were significantly protected against challenge with a percutaneous infection of S. mansoni cercariae compared with a group of mice also immunized with CTF, but which had not produced antibodies against the 27/28 kDa doublet. The results indicate that the 27 kDa serine protease of S. mansoni larvae is a target that is sensitive to immunol. attack.

L45 ANSWER 7 OF 13 MEDLINE DUPLICATE 5
ACCESSION NUMBER: 96217745 MEDLINE
DOCUMENT NUMBER: 96217745 PubMed ID: 8648220
TITLE: Enhancement of **Schistosoma mansoni** infectivity by intradermal injections of larval extracts: a putative role for larval proteases.
AUTHOR: Fallon P G; Teixeira M M; Neice C M; Williams T J; Hellewell P G; **Doenhoff M J**
CORPORATE SOURCE: School of Biological Science, University of Wales, Bangor, UK.
SOURCE: JOURNAL OF INFECTIOUS DISEASES, (1996 Jun) 173 (6) 1460-6.
Journal code: 0413675. ISSN: 0022-1899.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Abridged Index Medicus Journals; Priority Journals
ENTRY MONTH: 199607
ENTRY DATE: Entered STN: 19960805
Last Updated on STN: 20000303
Entered Medline: 19960725

AB Extracts of **Schistosoma mansoni** cercariae caused increased vascular permeability and edema if administered to CBA/Ca mice by intradermal injection. Percutaneous infection with cercariae over the skin site at which cercarial homogenate (CH) had been injected intradermally resulted in a significant increase in the infectivity of **S. mansoni** compared with that shown by worm recovery from control animals ($P < .05$). This effect was abrogated by inhibition of protease activity prior to injection. Injection of inflammatory mediators (bradykinin or zymosan-activated

plasma) with or without prostaglandin E2 produced a similar amount of edema as did CH. Injection of these mediators did not, however, enhance infectivity of cercariae. Pancreatic **elastase** was found to induce edema and enhancement of infectivity comparable to those induced by CH. The protease(s) introduced into the site of infection may have facilitated larval migration directly by hydrolyzing host tissue or indirectly by inducing an inflammatory response (or both).

L45 ANSWER 8 OF 13 SCISEARCH COPYRIGHT 2003 ISI (R)
ACCESSION NUMBER: 96:174761 SCISEARCH
THE GENUINE ARTICLE: TX133
TITLE: RARE CODON USAGE IN ESCHERICHIA-COLI AND THE EXPRESSION OF POTENTIALLY TOXIC GENES - REPLY
AUTHOR: **SAYERS J R (Reprint)**; PRICE H P; FALLON P G; **DOENHOFF M J**
CORPORATE SOURCE: UNIV WALES, DEPT BIOCHEM, BANGOR LL57 2UW, GWYNEDD, WALES (Reprint)
COUNTRY OF AUTHOR: WALES
SOURCE: PARASITOLOGY TODAY, (MAR 1996) Vol. 12, No. 3, pp. 124-125.
ISSN: 0169-4758.
DOCUMENT TYPE: Letter; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 8

L45 ANSWER 9 OF 13 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1997:102809 BIOSIS
DOCUMENT NUMBER: PREV199799402012
TITLE: Anomalous immunogenicity of serine proteases.
AUTHOR(S): Darani, H. Yousofi; **Doenhoff, M. J.**
CORPORATE SOURCE: Sch. Biol. Sci., Univ. Wales, Bangor, Gwynedd LL57 2UW UK
SOURCE: Immunology, (1996) Vol. 89, No. SUPPL. 1, pp. 41.
Meeting Info.: Joint Congress of the British Society for Immunology and the Biochemical Society Harrogate, England, UK December 10-13, 1996
ISSN: 0019-2805.
DOCUMENT TYPE: Conference; Abstract; Conference
LANGUAGE: English

L45 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2003 ACS DUPLICATE 6
ACCESSION NUMBER: 1995:840245 HCAPLUS
DOCUMENT NUMBER: 123:277624
TITLE: AGA/AGG codon usage in parasites: Implications for gene expression in Escherichia coli
AUTHOR(S): **Sayers, Jon R.**; Price, Helen P.; Fallon, Padraic G.; **Doenhoff, Michael J.**
CORPORATE SOURCE: Royal Hallamshire Hospital, University Sheffield, Sheffield, S10 2JF, UK
SOURCE: Parasitology Today (1995), 11(9), 345-6
CODEN: PATOE2; ISSN: 0169-4758
PUBLISHER: Elsevier Trends Journals
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Sequence anal. has revealed that codons are not necessarily used to the same extent where degeneracy exists. Codon bias may have

profound effects on the expression of parasite genes in heterologous hosts with conflicting codon usage.

L45 ANSWER 11 OF 13 MEDLINE DUPLICATE 7
ACCESSION NUMBER: 95107656 MEDLINE
DOCUMENT NUMBER: 95107656 PubMed ID: 7808765
TITLE: Complex formation of human alpha-1-antitrypsin with components in **Schistosoma mansoni** cercariae.
AUTHOR: Modha J; **Doenhoff M J**
CORPORATE SOURCE: Department of Biochemistry, University of Glasgow, UK.
SOURCE: PARASITE IMMUNOLOGY, (1994 Aug) 16 (8) 447-50.
Journal code: 7910948. ISSN: 0141-9838.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199501
ENTRY DATE: Entered STN: 19950215
Last Updated on STN: 20000303
Entered Medline: 19950130

AB Human alpha-1-antitrypsin (alpha 1-AT) was incubated with an extract of **Schistosoma mansoni** cercariae or porcine pancreatic **elastase** and analysed by immunoelectrophoresis and Western blotting. The inhibitor was shown to form complexes with components in **S. mansoni** cercariae in the same way as **elastase**. The role of alpha 1-AT in **S. mansoni** infection is discussed.

L45 ANSWER 12 OF 13 MEDLINE DUPLICATE 8
ACCESSION NUMBER: 91266366 MEDLINE
DOCUMENT NUMBER: 91266366 PubMed ID: 2097086
TITLE: Proteases in the **schistosome** life cycle: a paradigm for tumour metastasis.
AUTHOR: **Doenhoff M J**; Curtis R H; Ngaiza J; Modha J
CORPORATE SOURCE: School of Biological Sciences, University College of North Wales, UK.
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AB Cancers and parasites have a number of properties in common, particularly those that relate to their respective capacities to evade host defence mechanisms. This review highlights the similarities between metastatic tumours and **schistosomes** in particular, and describes the role that proteases may have in the migration, growth, survival and transmission of the different stages of the **schistosome** life-cycle in the vertebrate host. An

elastase-like serine protease of **schistosome** larvae has been particularly well characterized, and its substrate profile and other properties are indicative of a role in facilitating migration of the parasite through skin tissue early after infection. The primary structures of a cathepsin B-like enzyme, and a putative 'haemoglobinase' found in adult worms have also recently been derived, these enzymes being responsible for degradation of haemoglobin in erythrocytes upon which the adults feed. Adult **schistosome** worms reside and produce eggs intravascularly, and the processes that mediate the extravasation and subsequent migration of the egg through host tissue are dependent on both blood platelets and the immune response. Fibrino(geno)lytic enzymatic activity that is present in the egg could modulate the thrombogenic potential that eggs might have as a result of their capacity to cause platelet aggregation in vitro and in vivo. The roles of other proteases and peptidases that have been found in **schistosome** larvae, worms and eggs are less clear. Some of these enzymes may modulate immunological and haemostatic defence mechanisms and thus prolong survival of the parasite, and the consequences of the interactions between **schistosomes** and host protease inhibitors could also be immune modulatory.

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